

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS <i>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30</i>				1. REQUISITION NUMBER PR-OAR-19-00748		PAGE OF 1 3							
2. CONTRACT NO. EP-W-16-015			3. AWARD/ EFFECTIVE DATE		4. ORDER NUMBER 68HERH19F0254		5. SOLICITATION NUMBER						
							6. SOLICITATION ISSUE DATE						
7. FOR SOLICITATION INFORMATION CALL:			a. NAME Michael Fox			b. TELEPHONE NUMBER (No collect calls) 202-564-2550		8. OFFER DUE DATE/LOCAL TIME ET					
9. ISSUED BY HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460			CODE HQAD		10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED OR <input type="checkbox"/> SET ASIDE: % FOR: <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS </div> <div> <input type="checkbox"/> WOMEN-OWNED SMALL BUSINESS (WOSB) ELIGIBLE UNDER THE WOMEN-OWNED SMALL BUSINESS PROGRAM <input type="checkbox"/> EDWOSB <input type="checkbox"/> 8(A) </div> <div> NAICS: 541620 SIZE STANDARD: \$15.0 </div> </div>								
11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input checked="" type="checkbox"/> SEE SCHEDULE			12. DISCOUNT TERMS			13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) <input type="checkbox"/>		13b. RATING					
								14. METHOD OF SOLICITATION <input type="checkbox"/> RFQ <input type="checkbox"/> IFB <input type="checkbox"/> RFP					
15. DELIVER TO OAR/OAQPS/AQAD US Environmental Protection Agency Mail Code: C304-02 109 TW Alexander Drive Durham NC 27711			CODE OAR/OAQPS/AQAD		16. ADMINISTERED BY HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460				CODE HQAD				
17a. CONTRACTOR/ OFFEROR WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972 <div style="border: 1px solid black; width: 150px; height: 20px; margin: 5px 0;">(b)(4)</div> TELEPHONE NO.			CODE 038086125		FACILITY CODE		18a. PAYMENT WILL BE MADE BY RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711						
							18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM						
19. ITEM NO.			20. SCHEDULE OF SUPPLIES/SERVICES			21. QUANTITY		22. UNIT		23. UNIT PRICE		24. AMOUNT	
			DUNS Number: 038086125 Title: NADP Annual Support (3014) This task order is issued in accordance with Task Order Ordering Procedures and hereby incorporates the base contract terms and conditions by reference. The effective date for performance to commence is July 9, 2019. The Contractor shall perform in accordance with the Attachment A Statement of Work (6 pages) and (Use Reverse and/or Attach Additional Sheets as Necessary)										
25. ACCOUNTING AND APPROPRIATION DATA See schedule								26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$509,396.00					
<input type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4, FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA <input checked="" type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA								<input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED. <input type="checkbox"/> ARE <input checked="" type="checkbox"/> ARE NOT ATTACHED.					
<input type="checkbox"/> 28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED.						<input type="checkbox"/> 29. AWARD OF CONTRACT: _____ OFFER DATED _____. YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:							
30a. SIGNATURE OF OFFEROR/CONTRACTOR						31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER) ELECTRONIC SIGNATURE							
30b. NAME AND TITLE OF SIGNER (Type or print)			30c. DATE SIGNED			31b. NAME OF CONTRACTING OFFICER (Type or print) Michael C. Fox			31c. DATE SIGNED 07/03/2019				

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
0001	<p>the accepted technical proposal and cost estimate dated June 14, 2019 (8 pages) in the amount of \$509,396.00.</p> <p>This is a Time-and-Materials (T&M) task order with a total ceiling price of \$509,396.00, which the Contractor is not authorized to exceed. The Contractor exceeds at its own risk.</p> <p>The total obligated/funded ceiling amount for this order is currently \$59,509.00. This order is incrementally funded as detailed in Attachment B Summary of Amounts and Ceilings and Attachment B is hereby incorporated (1 page).</p> <p>Contracting Officer's Representative (COR) for this task order: Macy Taylor, (202) 343-9183, Macy.Taylor@epa.gov</p> <p>Alternate COR: Melissa Puchalski, (202) 343-9882, Puchalski.Melissa@epa.gov</p> <p>The services of this order are for severable. TOCOR: Melissa Puchalski Period of Performance: 07/09/2019 to 07/08/2020</p> <p>NADP Annual Support</p> <p>Continued ...</p>				

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE		32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE			32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
			32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
33. SHIP NUMBER	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	37. CHECK NUMBER
<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL				
38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY		
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT		42a. RECEIVED BY (<i>Print</i>)		
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER		41c. DATE	42b. RECEIVED AT (<i>Location</i>)	
			42c. DATE REC'D (YY/MM/DD)	42d. TOTAL CONTAINERS

NAME OF OFFEROR OR CONTRACTOR
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Accounting Info: 18-E1-58D5-000A04-2505-1958DC9038-001 BFY: 18 Fund: E1 Budget Org: 58D5 Program (PRC): 000A04 Budget (BOC): 2505 DCN - Line ID: 1958DC9038-001 Funding Flag: Complete Funded: \$42,519.00 Accounting Info: 19-E1-58D5-000A04-2505-1958DC9038-002 BFY: 19 Fund: E1 Budget Org: 58D5 Program (PRC): 000A04 Budget (BOC): 2505 DCN - Line ID: 1958DC9038-002 Funding Flag: Complete Funded: \$16,990.00				

ATTACHMENT A
Statement of Work

Title: NADP Annual Support (3014)

Contractor: Wood Environment & Infrastructure Solutions, Inc.

Contract #: EP-W-16-015

Task Order #: 68HERH19F0254

Period of Performance: 7/9/2019 to 7/8/2020

EPA Key Personnel

Task Order Project Officer (TOPO)/Contract Level Project Officer (PO):

Taylor Macy
Clean Air Markets Division (OAP/OAR/CAMD)
1200 Pennsylvania Ave., NW
Mail Code 6204M
Washington, DC 20460
phone: (202) 343-9183
email: macy.taylor@epa.gov

Alternate TOPO:

Melissa Puchalski
Clean Air Markets Division (OAP/OAR/CAMD)
1200 Pennsylvania Ave., NW
Mail Code 6204M
Washington, DC 20460
phone: (202) 343-9882
email: puchalski.melissa@epa.gov

Contracting Officer (CO):

Michael Fox
Contracting Officer
Administrative Contract Service Center
1200 Pennsylvania Ave N.W.
Mail Code 3803R
Washington DC 20460
phone: (202) 564-2550
email: fox.michael@epa.gov

STATEMENT OF WORK

I. INTRODUCTION

The Clean Air Status and Trends Network (CASTNET) is a long-term environmental monitoring network that measures changes in ambient air quality and assesses atmospheric deposition over broad geographic regions of the U.S. (<https://www.epa.gov/castnet>). Operating since 1987, CASTNET has evolved into a robust regional monitoring program which currently consists of approximately 95 monitoring stations nationwide. The Environmental Protection Agency (EPA) coordinates the operation of the network in cooperation with numerous federal, tribal, state and local partners.

The primary monitoring objectives of CASTNET are to:

- Provide high quality data on atmospheric deposition, rural ground level ozone and other forms of atmospheric pollution;
- Support the primary and secondary ozone NAAQS and provide data on NAAQS compliance in rural areas;
- Monitor the status and trends in regional air quality and atmospheric deposition;
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and atmospheric deposition;
- Improve our understanding of PM and ozone formation;
- Validate and improve atmospheric models;
- Provide data for health-based research and epidemiology studies;
- Assess the effectiveness of EPA's emission reduction programs; and
- Support science and ecosystem studies.

CASTNET sites measure weekly average concentrations of sulfate (SO_4^{2-}), nitrate (NO_3^-), ammonium (NH_4^+), sulfur dioxide (SO_2), nitric acid (HNO_3), chloride (Cl^-) and the base cations (Na^+ , K^+ , Mg^{2+} and Ca^{2+}) using a 3-stage filter pack. In addition, each site may make ancillary measurements, including hourly ozone (O_3), hourly meteorology, ammonia (NH_3) gas using passive devices, and trace-level gases. Trace-level gas monitors include reactive oxidized nitrogen (NO_y), nitric oxide (NO), sulfur dioxide (SO_2) and carbon monoxide (CO). CASTNET O_3 , meteorological, and trace gas measurements follow the requirements in the Code of Federal Regulations (CFR) and EPA's Quality Assurance Handbook.

II. PURPOSE

The primary purpose of this task order is to provide support for the National Atmospheric Deposition Program's (NADP's) network operations and site support. This includes EPA's Clean Air Markets Division (CAMD) support for analytical chemistry, quality assurance (QA), and network equipment services provided by the Wisconsin State Laboratory of Hygiene (WSLH) for NADP.

III. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this task order are consistent with the activities authorized in Task 22 (Level of Effort) from the contract's Statement of Work for Contract # EP-W-16-015 (CASTNET V).

IV. TECHNICAL DIRECTION

1. Prepare a Technical Proposal & Cost Estimate

The Contractor shall prepare a Technical Proposal and Cost Estimate using the fixed labor rates for the Level of Effort task orders under the CASTNET V contract clause B.1, Fixed Rates for Services, using time and materials with a cost ceiling.

The contractor shall ensure that all requirements under this task order are met through program management and QA performance reviews. The contractor shall establish the project in their contract tracking system, review, approve and track subcontract proposals and staff, track progress of the projects, and QA and review all required deliverables.

2. NADP Participation

The contractor shall coordinate with NADP's Program Office (PO) and Central Analytical Laboratory to provide chemical and analytical, data validation, and site support services for all NADP's National Trends Network (NTN), Ammonia Monitoring Network (AMoN), and Atmospheric Mercury Network (AMNet) sites listed in Tables 1, 2, and 3, respectively. EPA's CAMD supports the chemical analysis, data validation, network equipment depot, and PO coordination for 32 NTN sites; chemical analysis and PO coordination of 71 AMoN sites; and PO coordination of 2 AMNet sites.

The contractor shall coordinate with NADP's PO to provide quality assurance services for NTN and AMNet to ensure conformance with NADP's network quality assurance plans and procedures for field and laboratory operations and data management.

The contractor shall coordinate with NADP's Program Office to provide support for use of Parameter-elevation Regressions on Independent Slopes *Model (PRISM)*, which produces digital grids of precipitation estimates from many precipitation-monitoring networks.

Table 1 NADP's NTN sites supported by EPA's CAMD

NTN Site ID	Site Name
AL99	Sand Mountain Ag Exp Station
AZ98	Chiricahua
CO08	Four Mile Park
CO10	Gothic
CO92	Sunlight Peak
CO94	Sugarloaf
CT15	Abington
FL03	Bradford Forest
FL23	Sumatra
GA20	Bellville
IL11	Bondville
IL46	Alhambra
ME04	Carrabassett Valley
MI51	Unionville
MI52	Ann Arbor
MI98	Raco
MN18	Fernberg
NC06	Beaufort
NJ39	Cattus Island County Park

NJ99	Washington Crossing
NY22	Akwesasne Mohawk - Fort Covington
NY52	Bennett Bridge
NY67	Connecticut Hill**
OH54	Deer Creek State Park
OR97	Hyslop Farm
PA00	Arendtsville
TN04	Speedwell
VA13	Horton's Station
VA24	Prince Edward
WA21	LaGrande
WI35	Perkinstown
WV05	Cedar Creek State Park

** NY67 supported for 2 months only (July 9, 2019 – September 1, 2019)

Table 2 NADP AMoN sites supported by EPA's CAMD

AMoN Site ID	Site Name
AL99	Sand Mt Research & Extension Ctr
AR03	Caddo Valley
CO10	Gothic
CO13	Fort Collins
CT15	Abington
FL19	Indian River
FL23	Sumatra
GA41	Georgia Station
ID07	Nez Pearce
IL11	Bondville
IL37	Stockton
IL46	Alhambra
IN20	Roush Lake
IN22	SW Purdue Ag Center)
IN99	Indianapolis
KS31	Konza Prairie
KS97	Kickapoo Tribe - Powhattan
KY03	Mackville
KY29	Crockett
KY98	Cadiz
MD06	Blackwater NWR
ME93	Ashland
MI51	Unionville
MI52	Ann Arbor
MI95	Hoxeyville
MI96	Detroit
MN18	Fernberg (3 and 1)
MN02	Red Lake
MS30	Coffeeville

NC02	Cranberry
NC06	Carteret
NC25	Coweeta
NC26	Candor
NC30	Duke Forest
NC35	Clinton Crops Research Station
NC98	Duke Forest Flux Tower
NE98	Santee
NH02	Hubbard Brook
NJ98	Washington Crossing- CASTNET
NM98	Navajo Lake
NM99	Farmington
NY20	Huntington Wildlife
NY67	Ithaca (3 and 1)
NY91	Claryville
NY94	Nick's Lake
NY98	Whiteface Mountain
OH02	Athens
OH09	Oxford
OH27	Cincinnati
OH54	Deer Creek State Park
OH99	Quaker City
OK99	Stilwell
PA00	Arendtsville
PA29	Kane Experimental Forest
PA96	Penn State - Fairbrook Park
PA56	M. K. Goddard
PA97	Laurel Hill
SC05	Cape Romain National Wildlife Refuge
TN04	Speedwell
TN07	Edgar Evins
TX41	Alabama-Coushatta
TX43	Canonceta
VA13	Horton's Station
VA24	Prince Edward
VT99	Underhill
WI07	Mayville
WI35	Perkinstown
WV05	Cedar Creek State Park
WV18	Parsons
WY06	Pinedale
WY95	Brooklyn Lake

Table 3 NADP's AMNet sites supported by EPA's CAMD

AMNet Site ID	Site Name
NJ30	New Brunswick

V. DELIVERABLES AND SCHEDULE

Laboratory data and resultant concentration in precipitation data will be delivered by WSLH to the NADP website (<http://nadp.slh.wisc.edu/>). The contractor will not perform analysis, validation, posting or QA/QC of data under this task order.

1. Technical Proposal & Cost Estimate

The contractor shall deliver a Task Order TP&CE in accordance with clause B-1 in the Contract (EP-W-16-015). The TP&CE shall be submitted 10 days after receipt of the SOW.

2. Monthly Progress Report

The contractor shall prepare and submit a monthly progress report by the 15th of each month summarizing the progress made, issues encountered or expected, work planned for the next reporting period and costs. These reports shall comply with contract clauses F.1 Monthly Progress Report and F-5 Reports of work. Reports shall be delivered electronically.

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer (Mike Fox)	1
EPA Task Order Project Officer (Taylor Macy)	1
EPA Alternate TOPO (Melissa Puchalski)	1

EP-W-16-015
Order#: 68HERH19F0254
Project#: 3014

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$59,509.00
Total	-	-	\$59,509.00

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$509,396.00
Total	-	-	\$509,396.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 2	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P00001		See Block 16C		PR-OAR-19-01206		3014	
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
HQAD							
US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972							
				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				x			
				10A. MODIFICATION OF CONTRACT/ORDER NO.			
				EP-W-16-015			
				68HERH19F0254			
				10B. DATED (SEE ITEM 13)			
				07/03/2019			
CODE 038086125		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)				Net Increase:		\$99,946.00	
See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION						
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125							
The purpose of this modification is to obligate incremental funding in the amount of \$99,946.00 to this task order.							
TOCOR: Melissa Puchalski							
LIST OF CHANGES:							
Reason for Modification: Funding Only Action							
Obligated Amount for this Modification: \$99,946.00							
New Total Obligated Amount for this Award: \$159,455.00							
Incremental Funded Amount changed: from \$59,509.00 to \$159,455.00							
CHANGES FOR LINE ITEM NUMBER: 1							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
				ELECTRONIC SIGNATURE 		07/17/2019	
(Signature of person authorized to sign)				(Signature of Contracting Officer)			

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH19F0254/P00001	2	2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Obligated Amount for this Modification: \$99,946.00 Incremental Funded Amount changed from \$59,509.00 to \$159,455.00</p> <p>NEW ACCOUNTING CODE ADDED: Account code: 18-E1D-58D5-000A04-2505-1958DC9070-001 Beginning FiscalYear 18 Ending Fiscal Year Fund (Appropriation) E1D Budget Organization 58D5 Program (PRC) 000A04 Budget (BOC) 2505 Job # (Site/Project) Cost Organization DCN-LineID 1958DC9070-001 Amount: \$99,946.00 Subject To Funding: N Payment Address: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 07/09/2019 to 07/08/2020</p>				

EP-W-16-015
Order#: 68HERH19F0254
Project#: 3014
Modification#: P00001

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	\$59,509.00	\$99,946.00	\$159,455.00
Total	\$59,509.00	\$99,946.00	\$159,455.00

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$509,396.00
Total	-	-	\$509,396.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 2	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P000002		See Block 16C		PR-OAR-19-01445			
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
HQAD							
US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				x 10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 68HERH19F0254			
CODE 038086125		FACILITY CODE		10B. DATED (SEE ITEM 13)			
				07/03/2019			
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12. ACCOUNTING AND APPROPRIATION DATA (If required)				Net Increase:		\$15,000.00	
See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION						
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125							
The purpose of this modification is to obligate incremental funding in the amount of \$15,000.00 to this task order.							
TOCOR: Melissa Puchalski							
LIST OF CHANGES:							
Reason for Modification: Funding Only Action							
Obligated Amount for this Modification: \$15,000.00							
New Total Obligated Amount for this Award: \$174,455.00							
Incremental Funded Amount changed: from							
\$159,455.00 to \$174,455.00							
CHANGES FOR LINE ITEM NUMBER: 1							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
(Signature of person authorized to sign)				 (Signature of Contracting Officer)		ELECTRONIC SIGNATURE 09/10/2019	

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH19F0254/P00002	2	2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Obligated Amount for this Modification: \$15,000.00 Incremental Funded Amount changed from \$159,455.00 to \$174,455.00</p> <p>NEW ACCOUNTING CODE ADDED: Account code: 19-E1-58D5-000A17-2505-1958DC9084-001 Beginning FiscalYear 19 Ending Fiscal Year Fund (Appropriation) E1 Budget Organization 58D5 Program (PRC) 000A17 Budget (BOC) 2505 Job # (Site/Project) Cost Organization DCN-LineID 1958DC9084-001 Amount: \$15,000.00 Subject To Funding: N Payment Address: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 07/09/2019 to 07/08/2020</p>				

EP-W-16-015
Order#: 68HERH19F0254
Project#: 3014
Modification#: P00002

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	\$159,455.00	\$15,000.00	\$174,455.00
Total	\$159,455.00	\$15,000.00	\$174,455.00

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$509,396.00
Total	-	-	\$509,396.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 3	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P00003		See Block 16C		PR-OAR-20-00058			
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
HQAD							
HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972							
				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				x 10A. MODIFICATION OF CONTRACT/ORDER NO.			
				EP-W-16-015			
				68HERH19F0254			
				10B. DATED (SEE ITEM 13)			
				07/03/2019			
CODE 038086125		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)				Net Increase:		\$56,735.29	
See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION						
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125							
The purpose of this modification is to obligate incremental funding in the amount of \$56,735.29 to this task order.							
TOCOR: Melissa Puchalski							
LIST OF CHANGES:							
Reason for Modification: Funding Only Action							
Obligated Amount for this Modification: \$56,735.29							
New Total Obligated Amount for this Award: \$231,190.29							
Incremental Funded Amount changed: from							
\$174,455.00 to \$231,190.29							
CHANGES FOR LINE ITEM NUMBER: 1							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
				 ELECTRONIC SIGNATURE (Signature of Contracting Officer)		10/22/2019	
(Signature of person authorized to sign)							

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH19F0254/P00003	2	3

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Obligated Amount for this Modification: \$56,735.29</p> <p>Incremental Funded Amount changed from \$174,455.00 to \$231,190.29</p> <p>NEW ACCOUNTING CODE ADDED:</p> <p>Account code: 19-20-C-58D5-000A45-2505-2058DC0005-001</p> <p>Beginning FiscalYear 19</p> <p>Ending Fiscal Year 20</p> <p>Fund (Appropriation) C</p> <p>Budget Organization 58D5</p> <p>Program (PRC) 000A45</p> <p>Budget (BOC) 2505</p> <p>Job # (Site/Project)</p> <p>Cost Organization</p> <p>DCN-LineID 2058DC0005-001</p> <p>Amount: \$56,735.29</p> <p>Subject To Funding: N</p> <p>Payment Address:</p> <p style="padding-left: 40px;">RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center (AA216-01)</p> <p>109 TW Alexander Drive</p> <p>www2.epa.gov/financial/contracts</p> <p>Durham NC 27711</p> <p>Payment:</p> <p style="padding-left: 40px;">RTP Finance Center</p> <p style="padding-left: 40px;">US Environmental Protection Agency</p> <p style="padding-left: 40px;">RTP-Finance Center (AA216-01)</p> <p style="padding-left: 40px;">109 TW Alexander Drive</p> <p style="padding-left: 40px;">www2.epa.gov/financial/contracts</p> <p style="padding-left: 40px;">Durham NC 27711</p> <p>Period of Performance: 07/09/2019 to 07/08/2020</p>				

EP-W-16-015
Order#: 68HERH19F0254
Project#: 3014
Modification#: P00003

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	\$174,455.00	\$56,735.29	\$231,190.29
Total	\$174,455.00	\$56,735.29	\$231,190.29

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$509,396.00
Total	-	-	\$509,396.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 3	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P00004		See Block 16C		PR-OAR-20-00109		3014	
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
HQAD							
US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972							
				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				x			
				10A. MODIFICATION OF CONTRACT/ORDER NO.			
				EP-W-16-015			
				68HERH19F0254			
				10B. DATED (SEE ITEM 13)			
				07/03/2019			
CODE 038086125		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)				Net Increase:		\$150,000.00	
See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION						
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125							
The purpose of this modification is to obligate incremental funding in the amount of \$150,000.00 to this task order.							
TOCOR: Melissa Puchalski							
LIST OF CHANGES:							
Reason for Modification: Funding Only Action							
Obligated Amount for this Modification: \$150,000.00							
New Total Obligated Amount for this Award: \$381,190.29							
Incremental Funded Amount changed: from							
\$231,190.29 to \$381,190.29							
CHANGES FOR LINE ITEM NUMBER: 1							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
				ELECTRONIC SIGNATURE 		11/06/2019	
(Signature of person authorized to sign)				(Signature of Contracting Officer)			

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH19F0254/P00004	2	3

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Obligated Amount for this Modification: \$150,000.00</p> <p>Incremental Funded Amount changed from \$231,190.29 to \$381,190.29</p> <p>NEW ACCOUNTING CODE ADDED: Account code: 20-21-C-58D5-000A45-2505-2058DC0006-001 Beginning FiscalYear 20 Ending Fiscal Year 21 Fund (Appropriation) C Budget Organization 58D5 Program (PRC) 000A45 Budget (BOC) 2505 Job # (Site/Project) Cost Organization DCN-LineID 2058DC0006-001 Amount: \$150,000.00 Subject To Funding: N Payment Address: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 07/09/2019 to 07/08/2020</p>				

EP-W-16-015
Order#: 68HERH19F0254
Project#: 3014
Modification#: P00004

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	\$231,190.29	\$150,000.00	\$381,190.29
Total	\$231,190.29	\$150,000.00	\$381,190.29

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$509,396.00
Total	-	-	\$509,396.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 2	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P00005		See Block 16C		PR-OAR-20-00184		3014	
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
HQAD							
US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972							
				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				x			
				10A. MODIFICATION OF CONTRACT/ORDER NO.			
				EP-W-16-015			
				68HERH19F0254			
				10B. DATED (SEE ITEM 13)			
				07/03/2019			
CODE 038086125		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)				Net Increase:		\$128,205.71	
See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION						
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125							
The purpose of this modification is to obligate incremental funding in the amount of \$128,205.71 to this task order. This task order is now fully-funded in the amount of \$509,396.00.							
TOCOR: Melissa Puchalski							
LIST OF CHANGES:							
Reason for Modification: Funding Only Action							
Obligated Amount for this Modification: \$128,205.71							
New Total Obligated Amount for this Award: \$509,396.00							
Incremental Funded Amount changed: from							
\$381,190.29 to \$509,396.00							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
				ELECTRONIC SIGNATURE 		11/20/2019	
(Signature of person authorized to sign)				(Signature of Contracting Officer)			

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH19F0254/P00005	2	2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>CHANGES FOR LINE ITEM NUMBER: 1</p> <p>Obligated Amount for this Modification: \$128,205.71</p> <p>Incremental Funded Amount changed from \$381,190.29 to \$509,396.00</p> <p>NEW ACCOUNTING CODE ADDED:</p> <p>Account code: 19-20-C-58D5-000A45-2505-2058DC0014-001</p> <p>Beginning FiscalYear 19</p> <p>Ending Fiscal Year 20</p> <p>Fund (Appropriation) C</p> <p>Budget Organization 58D5</p> <p>Program (PRC) 000A45</p> <p>Budget (BOC) 2505</p> <p>Job # (Site/Project)</p> <p>Cost Organization</p> <p>DCN-LineID 2058DC0014-001</p> <p>Amount: \$128,205.71</p> <p>Subject To Funding: N</p> <p>Payment Address:</p> <p style="padding-left: 40px;">RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center (AA216-01)</p> <p>109 TW Alexander Drive</p> <p>www2.epa.gov/financial/contracts</p> <p>Durham NC 27711</p> <p>Payment:</p> <p style="padding-left: 40px;">RTP Finance Center</p> <p style="padding-left: 40px;">US Environmental Protection Agency</p> <p style="padding-left: 40px;">RTP-Finance Center (AA216-01)</p> <p style="padding-left: 40px;">109 TW Alexander Drive</p> <p style="padding-left: 40px;">www2.epa.gov/financial/contracts</p> <p style="padding-left: 40px;">Durham NC 27711</p> <p>Period of Performance: 07/09/2019 to 07/08/2020</p>				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES 1 2									
2. AMENDMENT/MODIFICATION NO. P00006		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable) 3014									
6. ISSUED BY HQAD		CODE HQAD		7. ADMINISTERED BY (If other than Item 6)		CODE									
US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460															
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972				(x)											
				9A. AMENDMENT OF SOLICITATION NO.											
				9B. DATED (SEE ITEM 11)											
				x 10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 68HERH19F0254											
CODE 038086125		FACILITY CODE		10B. DATED (SEE ITEM 13) 07/03/2019											
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS															
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.															
12. ACCOUNTING AND APPROPRIATION DATA (If required) See Schedule				Net Decrease:		-\$8,020.18									
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">CHECK ONE</td> <td>A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.</td> </tr> <tr> <td></td> <td>B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).</td> </tr> <tr> <td></td> <td>C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:</td> </tr> <tr> <td>X</td> <td>D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION</td> </tr> </table>								CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.		B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).		C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:	X	D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.														
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).														
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:														
X	D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION														
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.															
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)															
DUNS Number: 038086125 The purpose of this modification is to de-obligate funding in the amount of \$8,020.18 from this task order. TOCOR: Melissa Puchalski LIST OF CHANGES: Reason for Modification: Funding Only Action Obligated Amount for this Modification: -\$8,020.18 New Total Obligated Amount for this Award: \$501,375.82 Incremental Funded Amount changed: from \$509,396.00 to \$501,375.82 CHANGES FOR LINE ITEM NUMBER: 1 Continued ...															
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.															
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)											
				Michael C. Fox											
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED									
(Signature of person authorized to sign)				 (Signature of Contracting Officer)		ELECTRONIC SIGNATURE 09/04/2020									

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH19F0254/P00006	2	2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Obligated Amount for this Modification: -\$8,020.18</p> <p>Incremental Funded Amount changed from \$509,396.00 to \$501,375.82</p> <p>CHANGES FOR ACCOUNTING CODE: 20-21-C-58D5-000A45-2505-2058DC0006-001 Amount changed from \$150,000.00 to \$141,979.82</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 07/09/2019 to 07/08/2020</p>				

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS <i>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30</i>				1. REQUISITION NUMBER PR-OAR-20-00187		PAGE OF 1 3	
2. CONTRACT NO. EP-W-16-015		3. AWARD/ EFFECTIVE DATE 01/07/2020		4. ORDER NUMBER 68HERH20F0107		5. SOLICITATION NUMBER	
6. SOLICITATION ISSUE DATE							
7. FOR SOLICITATION INFORMATION CALL:		a. NAME Michael Fox			b. TELEPHONE NUMBER (No collect calls) 202-564-2550		8. OFFER DUE DATE/LOCAL TIME ET
9. ISSUED BY HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460				10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED OR <input type="checkbox"/> SET ASIDE: % FOR: <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS </div> <div> <input type="checkbox"/> WOMEN-OWNED SMALL BUSINESS (WOSB) ELIGIBLE UNDER THE WOMEN-OWNED SMALL BUSINESS PROGRAM <input type="checkbox"/> EDWOSB <input type="checkbox"/> 8(A) </div> <div> NAICS: 541620 SIZE STANDARD: \$15.0 </div> </div>			
11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input checked="" type="checkbox"/> SEE SCHEDULE		12. DISCOUNT TERMS		13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) <input type="checkbox"/>		13b. RATING	
15. DELIVER TO OAR/OAP US Environmental Protection Agency 1200 Pennsylvania Avenue NW Mail Code: 62101J OAR/OAP Washington DC 20460		CODE OAR/OAP		16. ADMINISTERED BY HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460		CODE HQAD	
17a. CONTRACTOR/OFFEROR WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972		CODE 038086125 FACILITY CODE		18a. PAYMENT WILL BE MADE BY RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711		CODE RTP FMC	
TELEPHONE NO. (b)(4)				18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM			
17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER <input type="checkbox"/>							
19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES			21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	DUNS Number: 038086125 Title: Conversion of scripts for the Total Deposition Measurement-Model Fusion application from ArcInfo into ArcPy (3016) This task order is issued in accordance with Task Order Ordering Procedures and hereby incorporates the base contract terms and conditions by reference. The effective date for performance to commence is January 8, 2020. <i>(Use Reverse and/or Attach Additional Sheets as Necessary)</i>						
25. ACCOUNTING AND APPROPRIATION DATA See Schedule						26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$119,436.00	
27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4, FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED.							
27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED.							
28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED.				29. AWARD OF CONTRACT: _____ OFFER DATED _____. YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:			
30a. SIGNATURE OF OFFEROR/CONTRACTOR				31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER) <div style="text-align: right;">ELECTRONIC SIGNATURE</div>			
30b. NAME AND TITLE OF SIGNER (Type or print)		30c. DATE SIGNED		31b. NAME OF CONTRACTING OFFICER (Type or print) Michael C. Fox		31c. DATE SIGNED 01/07/2020	

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	<p>The Contractor shall perform in accordance with the Attachment A Statement of Work (16 pages) and the accepted technical proposal and cost estimate dated December 19, 2019 (10 pages) in the amount of \$119,436.00.</p> <p>This is a Time-and-Materials (T&M) task order with a total ceiling price of \$119,436.00, which the Contractor is not authorized to exceed. The Contractor exceeds at its own risk.</p> <p>The total obligated/funded ceiling amount for this order is currently \$100,000.00. This order is incrementally funded as detailed in Attachment B Summary of Amounts and Ceilings and Attachment B is hereby incorporated (1 page).</p> <p>Contracting Officer's Representative (COR) for this task order: Greg Beachley, (202) 343-9621, Beachley.Gregory@epa.gov</p> <p>Alternate COR: Melissa Puchalski, (202) 343-9882, Puchalski.Melissa@epa.gov</p> <p>The services of this order are for severable. TOCOR: Greg Beachley Period of Performance: 01/08/2020 to 07/08/2020 Continued ...</p>				

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE		32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE			32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
			32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
33. SHIP NUMBER	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	37. CHECK NUMBER
<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL				
38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY		
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT		42a. RECEIVED BY (<i>Print</i>)		
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER		42b. RECEIVED AT (<i>Location</i>)		
		42c. DATE REC'D (YY/MM/DD)		42d. TOTAL CONTAINERS

NAME OF OFFEROR OR CONTRACTOR
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
0001	Conversion of scripts for the Total Deposition Measurement-Model Fusion application from ArcInfo into ArcPy Incrementally Funded Amount: \$100,000.00 Accounting Info: 19-20-C-58D5-000A45-2505-2058DC0016-001 BFY: 19 EFY: 20 Fund: C Budget Org: 58D5 Program (PRC): 000A45 Budget (BOC): 2505 DCN - Line ID: 2058DC0016-001 Funding Flag: Complete Funded: \$100,000.00				119,436.00

ATTACHMENT A
Statement of Work

Title: Conversion of scripts for the Total Deposition Measurement-
Model Fusion application from ArcInfo into ArcPy
Contractor: Wood Environment & Infrastructure Solutions, Inc.
Contract #: EP-W-16-015
Task Order #: 3016
Period of Performance: 1/8/2020 to 7/8/2020

EPA Key Personnel

Task Order Project Officer (TOPO)

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STATEMENT OF WORK

1.0. Background and Purpose

The Clean Air Status and Trends Network (CASTNET) was designed to measure ambient concentrations of sulfur (SO_2 , SO_4^{2-}), nitrogen (NO_3^- , HNO_3 , NH_4^+), chloride (Cl^-) and base cations (Ca^{2+} , Mg^{2+} , Na^+ , K^+) for reporting long-term region trends in dry and total deposition. Historically, CASTNET provided point estimates of deposition fluxes using ambient concentrations and modeled hourly deposition velocities calculated from land use, vegetation and on-site meteorological measurements. The inferential model used by CASTNET was the Multilayer Model (MLM; Meyers et al., 1998) and the basic assumption was:

$$F = C * V_d$$

Where F is the flux (kg ha^{-1}), C is the ambient concentration ($\mu\text{g m}^{-3}$) and V_d is the deposition velocity (cm s^{-1}). Deposition velocities are calculated using a resistance model (see Wesley et al., 1998; Wu et al., 2003).

The MLM provided dry deposition fluxes for measured species at monitoring locations. As critical loads research evolved, total deposition inputs as a spatially consistent coverage were required. They began using the Community Multiscale Air Quality Model (CMAQ) estimates for total deposition over a gridded surface. Briefly, the CMAQ model is a chemical transport model (CTM) used by EPA and the research community to simulate the fate of air pollutants from global to local scales (www.epa.gov/cmaq).

In 2014, under the direction and support of the National Atmospheric Deposition Program's (NADP) Total Deposition Science Committee (TDep), EPA developed an application for combining measured ambient concentrations with gridded CMAQ deposition velocities to provide surface maps of dry, wet and total (wet + dry) deposition estimates for nitrogen and sulfur pollutants, chloride, and base cations across the contiguous U.S. (CONUS) (Schwede and Lear, 2014). This application is referred to as the TDep measurement-model fusion application. Gridded surfaces for these pollutants are provided annually on the NADP/TDep webpage (<https://nadp.slh.wisc.edu/committees/tdep/tdepmaps/>).

The purpose of this Statement of Work (SOW) is to request a technical proposal and a cost estimate itemized by task from the contractor for modernizing EPA's code developed to create the TDep maps. The contractor shall utilize a subcontractor with knowledge of ArcPy, Python and CMAQ grid files. In addition, they should be familiar with CAMD data systems. The TOPO recommends accessing Sonoma Technology Inc (STI) as their staff have the skills and knowledge to complete this task order. The document will briefly describe the current application and outline what work will be needed to modernize and transcribe the application into an open-access language such as Python.

Overview of the TDep Measurement-Model Fusion Application

The approach of the TDep measurement-model fusion application (referred to herein as the 'TDep application') is shown in Figure 1. The application uses output from the CMAQ combined with weekly measurement data (e.g. from ambient air monitoring networks) to develop gridded bias-adjusted air concentrations using Inverse Distance Weighting (IDW) algorithms across the CONUS. These grids are then combined with CMAQ gridded deposition velocities to produce dry deposition values for the measured species (currently gas phase $\text{HNO}_3(\text{g})$ and $\text{SO}_2(\text{g})$ and particulate phase SO_4 , NO_3 , NH_4 , Ca, Cl, K, Mg, Na) labeled in Figure 1 as "weekly merged dry deposition". For species not measured including gas phase NO, NO_2 , HONO, N_2O_5 , NH_3 , PANs, and organic nitrates, the CMAQ dry deposition fluxes are used directly and are labeled as "CMAQ Weekly deposition of non-measured species". Both of these measured and non-measured dry deposition values are combined to obtain total dry deposition of nitrogen (N) or sulfur (S).

Wet deposition is also a fusion of two interpolated surfaces. First, in this step the weekly NADP National Trends Network (NTN) and daily Atmospheric Integrated Research Monitoring Network (AIRMoN) concentration in precipitation measurements are aggregated to annual values (Figure 1). A precipitation surface is derived from the Parameter-elevation Regressions on Independent Slopes Model (PRISM; www.prism.oregonstate.edu) and NADP precipitation observations. The PRISM modeled precipitation estimates incorporate point observation data, a reliable digital elevation model and expert knowledge of complex climatic variables that result in high resolution, continuous gridded estimates of total annual precipitation. The annual wet deposition grids are then calculated with the combined precipitation grid and the aggregate measured concentration grid.

The last combination step is the addition of the annual wet deposition grids with the annual bias-adjusted dry deposition grids to obtain the annual total deposition grids.

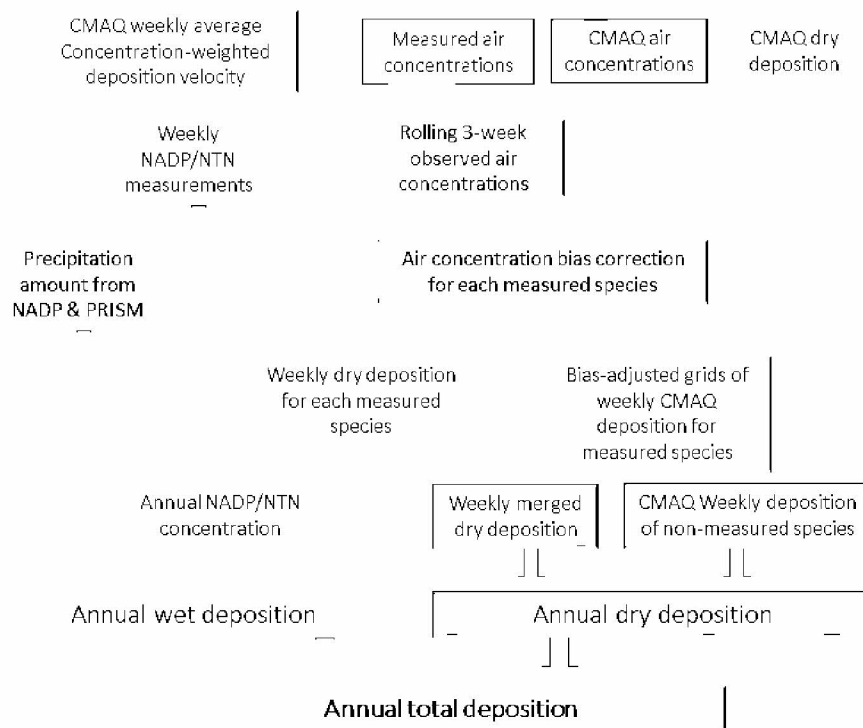


Figure 1. Flow diagram of TDep measurement: model fusion application.

Grids are created in ArcInfo using Arc Macro Language (AML) scripts which are no longer supported by ESRI. For this reason, the AML scripts are run on ArcGIS v9.3 on an antiquated Solaris server (oak.customs.epa.gov), that is kept running entirely for this purpose. This adds unnecessary complexity to the TDep map protocol, makes modification difficult, and prevents the production of the maps outside of the Clean Air Markets Division (CAMD). The goal is to develop more streamlined scripts that are flexible, extensible to different types of input datasets, fusion approaches, and customizable output. The scripts must be modifiable and adaptable to open-source contributions of sub-modules to accommodate different user-objectives.

2.0. Steps of the current TDep application scripts

The current process for creating the TDep maps are broken down into twelve steps identified below with brief descriptions. Details including the current script names, key functions, input and output data are provided in the Appendix.

2.1. Download and interpolate weekly ambient measurement data into grid files. Data from CASTNET are stored in CAMD's Oracle (v. 12.5.1.1) database. Currently, this includes ambient weekly concentrations for gases and particles. The raw ambient concentration data are pre-

processed to a standardized sampling interval (currently following the CASTNET Tuesday-Tuesday sampling schedule) and formatted using Oracle tables and views. The ambient concentration data are imported into ArcInfo, interpolated into grids using IDW. Cell-size for the grids are 4 km².

2.2. Download and interpolate annual wet deposition measurement data into grid files.

Creation of the annual fused wet deposition grids is briefly summarized. Raw annual modeled precipitation data is downloaded from the PRISM website (<http://www.prism.oregonstate.edu/recent/>) and NTN-measured concentrations in precipitation and NTN-measured precipitation is downloaded from the NADP website (<https://nadp.slh.wisc.edu/data/>). The PRISM and NTN data are loaded into Oracle and aggregated into annual averages (Figure 1). The TDep application will soon need to be updated to aggregate weekly PRISM data from the daily PRISM download (also available on the PRISM website). This will generate weekly wet deposition grids, and this improvement is discussed further in Task 3.3.2.

The NTN-measured concentrations in precipitation are collected weekly. The concentrations and precipitation amounts are aggregated into an annual interval in the CAMD Oracle database. In ArcInfo, the aggregated annual NADP data are imported and interpolated using IDW into measured concentration and measured precipitation grids with cell-sizes of 4 km². The annual NTN-measured precipitation grids are fused with the annual PRISM modeled precipitation grids in ArcInfo resulting in a single fused annual precipitation grid with a cell-size of 4.134 km². Wet deposition grids for each ion are then derived by combining the annual fused precipitation grid with the annual NADP concentration grids. These wet deposition grids are imported into the TDep routine at Step 2.8.

The scripts for this step have their own three-year average calculation scripts and map-generating scripts, as CAMD currently exports these maps as a separate product from the TDep maps (Figure 2).

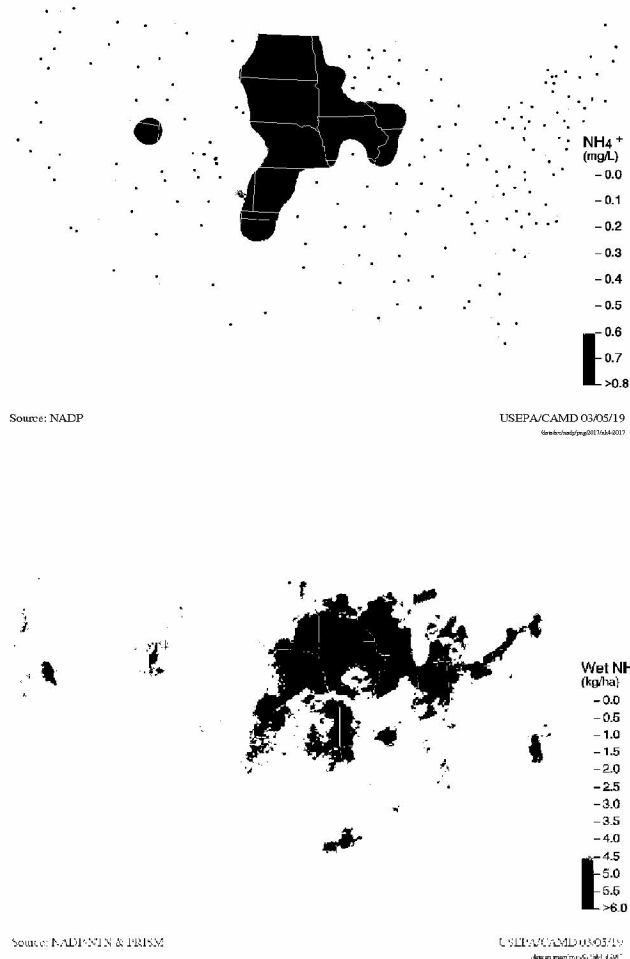


Figure 2. Examples of NH_4^+ wet deposition flux grids derived from (top) aggregate annual NTN-measured concentrations in precipitation, and from (bottom) aggregate annual NTN-measured concentrations and the fused annual aggregate precipitation grid (using NTN-measured precipitation and PRISM modeled precipitation). The upper plot shows the smooth IDW technique with gradients radiating outward from monitoring locations and has a cell-size of 4 km². The lower plot shows sharper edges and is more dependent on topographical features owing to the modeled precipitation values. The grid cell-size of the lower plot, however, has a slightly larger resolution of 4.134 km².

2.3. Retrieve extracted layers and variables from hourly NetCDF model output files into subsetting NetCDF files.

This task is performed outside of the TDep application and our division. The next iteration of modeled output will be from CMAQ v5.3 (currently using CMAQ v5.0.2). Differences between

the versions will occur and the updated TDep application will need to be extensible to different modeling formats. This is discussed further in Task 3.3.2.

2.4. Conversion and preparation of weekly CMAQ Arc grids from subsetting hourly netCDF files.

2.4.a. Download, inventory, manage, and archive extracts in NetCDF format.

CAMD retrieves the subsetting hourly CMAQ files from EPA's Office of Air and Radiation (ORD) 'ATMOS' server and stores the netCDF files on its 'PINE' (pine.customs.epa.gov) server. There are four media types of CMAQ data retrieved: air concentrations ('aconc'), deposition ('ddep'), deposition velocities ('depv'), and aerosol ions ('ions').

The netCDF files are stored by year and media in a manner that they can be extracted and processed in the next step. The file naming convention protocols are important for archiving, in case old datasets need to be retrieved.

2.4.b. Extract hourly CMAQ values from NetCDF and aggregate into weekly CMAQ raster files.

Using a PERL (PL) script, the hourly CMAQ data are extracted into daily layers or "slices" from 09:00 to 08:00 LT. Seven of these daily slices are then aggregated into weekly values (N=168 slices) which are then stored as 'CMAQ ASCII' grids (with file extensions as '.asc.gz' or '.txt'). These 'CMAQ ASCII' grids are created for concentrations (aconc), deposition (ddep), deposition velocities (depv), aerosol ions (ions), and weighted deposition velocities (wtdvd). The weekly aggregate 'CMAQ ASCII' grids have a grid-cell size of 12 km² and are stored on the CAMD PINE server.

2.4.c. Convert the CMAQ ASCII grids into CMAQ Arc grids.

The weekly aggregate CMAQ ASCII grids are then converted into Arc-readable grids, herein referred to as "Arc grids" and stored in a new location on the PINE server. This step is necessary in order for ArcInfo to read and manipulate the grids in later steps.

2.4.d. Sum CMAQ fractions of ions and aerosol components into weekly particle dry deposition grids

This step uses two AML scripts to properly account for and sum the appropriate fractions of aerosols and ion ratios (i.e. *i* for atkinson accumulation; *j* for 1 to 10 μm; *k* for coarse fraction) from the CMAQ Arc grids (from Step 2.4c) to obtain total 'component' weekly aggregate CMAQ Arc grids for the media types aconc and ions. The particle sizes are separate in the CMAQ Arc grids, but need to be combined to accurately estimate contributions from all sizes to deposition.

An example equation for NH₄⁺ is shown below:

$$NH_{4(total)} = NH_{4_i} + NH_{4_k} + NH_{4_j}$$

2.5. Calculate dry deposition from measured ambient concentration and CMAQ dry deposition velocity grids (depv)

Weekly measured dry deposition grids (referred to herein as ‘measured’ despite the use of modeled Vd) are calculated using the weekly measured concentration grids (Step 1 output) and the weekly CMAQ deposition velocity Arc grids (depv; from step 2.4.c.). This is done in two sub-routine iterations, the first calculates the weekly dry deposition for the measured gas species SO₂ and HNO₃ using the CMAQ deposition velocity Arc grids (depv). The second sub-routine is to calculate dry deposition grids of measured aerosols (NO₃, NH₄, SO₄, Ca, Mg, Na, K, and Cl) and uses the adjusted weekly CMAQ deposition velocity Arc grids (depv) using the aerosol ratios and deposition velocity component Arc grids (Step 2.4.d. output).

2.6. Adjusting the CMAQ dry deposition grids (ddep) for model bias

Systematic error is likely to exist between the measured and modeled concentrations used to calculate dry deposition. The following two sub-steps describe the calculation of a bias adjustment factor and the subsequent ‘adjustment’ of the CMAQ-modeled dry deposition grids as the assumption is made that measured values are more accurate than modeled values. For species that are not measured (NH₃ and ‘NOM’), no bias correction is done.

2.6.a. Calculate average model bias

Weekly CMAQ dry deposition values are extracted from the ‘ddep’ grids using the LATTICESPOT AML function at the coordinates for each monitoring site location. Site location values are exported into materialized views in the CAMD ORACLE database where the weekly and seasonal averages of all the deposition values in the grid are calculated. A logarithmic bias factor is calculated between the averages (at the monitoring locations) of the modeled concentrations (CMAQ.v50_conc_week) and measured concentrations (castnet.drychem_unpivot), and then interpolated to a seasonal and weekly bias correction grids using IDW. The bias adjustment grids are stored on the PINE server. For species that are not measured (NH₃, “NOM”), no bias grid is produced.

2.6.b. Adjust CMAQ deposition grids for bias

In ArcInfo, the weekly CMAQ dry deposition grids (ddep; Step 2.4.c. output) are then divided by the weekly log bias grids (Step 2.6.a.) and new ‘adjusted’ weekly CMAQ dry deposition grids, identified as “ddadj”, are produced and stored on the PINE server. The seasonal bias grids (Step 2.6.a.) are not used in the adjustment.

2.7. Create fused annual dry deposition grid from adjusted CMAQ dry deposition and measured dry deposition grids

2.7.a. Combine weekly deposition from CMAQ and measured deposition.

In ArcInfo, AML scripts are run to combine the weekly measured dry deposition grids (Step 2.5) with the adjusted weekly CMAQ dry deposition grids (ddadj; Step 2.6b output). It also uses grid weighting factors calculated in Step 2.1 for the measurement grid values (labeled as 'wtm') and the CMAQ grid (labeled as 'wtq'). These weighting factors are different than the bias adjustment and is used in the fusion step to preferentially weight measured values higher at distances close to monitoring sites and preferentially weight modeled values as you get further from the monitoring site. The output is a fused weekly dry deposition grid for measured species. The non-measured species are simply output as they are in Step 2.4.b.

2.7.b. Accumulate the deposition for each week to produce an annual dry deposition grid.

Following the creation of the weekly fused dry deposition grids (step 2.7.a), an AML script is used to cumulatively aggregate the weekly deposition grids (from week 1 to week N, up to N=52) using dynamic variables. The output for the 52nd week of the year is the aggregated annual fused dry deposition grid. Flexibility could be added into this step for users to manually enter a start and end week for dry deposition over user-customizable intervals.

2.8. Calculate total deposition for the year.

The aggregated annual fused dry deposition grids (Step 2.7.b) are combined using AML scripts with the annual fused wet deposition grids (Step 2.2) to get the annual total deposition grids (final step in Figure 1). The sums and percentages of total, oxidized, reduced, wet, and dry components are calculated as grids in the same AML scripts and the output list is described in the TDep application documentation (NADP, 2015). The output grids include the CMAQ dry deposition grids for non-measured N components (unadjusted), the net grids for NH₃ (deposition, nh3d; and emission, nh3e), and the fused precipitation grid (Step 2.2).

2.9. Export the data points from CASTNET and NTN and domain statistics to the CAMD ORACLE database.

Once the annual total deposition grids are produced, overall statistics on the grid values are run for different parameters and exported to a CAMD ORACLE database table. Also, the total deposition data at the coordinates for each monitoring site locations (for both CASTNET and NTN) are exported into CAMD Oracle database tables using the LATTICESPOT AML function.

2.10. Calculate 3-year averages for the total deposition grids.

The same AML scripts described above are called with specified input years (e.g. 2015 to 2017) to produce three-year average grids. These script contain a subscript ('average') that also needs specified on the command line, but the same output grids from Step 2.8 are produced for the three-year average period entered.

2.11. Plot/format maps from annual raster files

AML scripts are in place to produce maps (in .png and .jpg format) from the output grids produced in Step 2.8. The script includes file structure code and calls preset ArcMap options

(e.g. legends, color ramps, political borders) to allow consistent and reproducible maps. The .jpg maps use sun-angle elevation effects.

2.12. Export and distribute maps and annual raster files

A final AML script is used to restructure the filing system to make all grids and maps organized by species rather than year as they are generated in the above script. The file organization on the basis of species is user-requested.

3.0 TECHNICAL DIRECTION

TASKS

Task 1. Development of Technical Proposal and Cost Estimate

Estimated time: 40 hours.

The contractor shall prepare a technical proposal and cost estimate (TP&CE) using the fixed labor rates for the Level of Effort task orders under the CASTNET V contract clause B-1, Fixed Rates for Services, using a time and materials with a cost ceiling. The TP&CE shall be delivered within 10 days of the issuance of the task order SOW by EPA. The TP&CE should be broken down by task.

Within the tasks included in this SOW there may be optional tasks noted, which the contractor shall review and provide a cost estimate in terms of hours and dollars. The cost estimate will be used as a basis for prioritization of optional tasks to be completed. The optional tasks maybe revised as the project progresses and will be dependent on technical direction from the Task Order Project Officer (TOPO).

The contractor shall include hours required to participate in bi-weekly calls with the TOPO to discuss the project, review any progress, and prioritize tasks described in this SOW.

EPA shall work with the contractor on any tasks that must be coordinated (i.e. data delivery, testing scripts on CAMD servers).

Task 2. Planning and development of framework for the measurement-model fusion application.

Estimated time: 80 hours.

Prior to any script transcription, the contractor shall develop a plan for the framework of the new MMF application. The application will use a modern open source language with GIS-capable libraries and compatible with the ArcGIS Pro software. A good candidate may be Python 3 with the site package, ArcPy. To test the updated scripts the contractor shall reproduce past map products. The script will need to be run on LINUX.

The flexibility and extensibility of the script to adapt to current and future user needs should be considered in development the basic framework of the model. A hypothetical flow schematic is proposed in Figure 3. The base model should have a standardized data passing structure and the script should be streamlined with primary functions (e.g. grid calculations, map generation, creating file structures) separated where possible. The existing script has many instances where routines are redundant, non-functional, or out-of-order.

Input parameter values should be included in a central configuration file. It should have two staging data dictionaries that accept input data (one for modeled data and one for measured data) and should be able to interact with the CAMD Oracle database. To reduce the level of effort, all needed input data transformation steps to get to a standardized input format should be kept in the existing SQL format within the database. The standardized data format should be clearly defined.

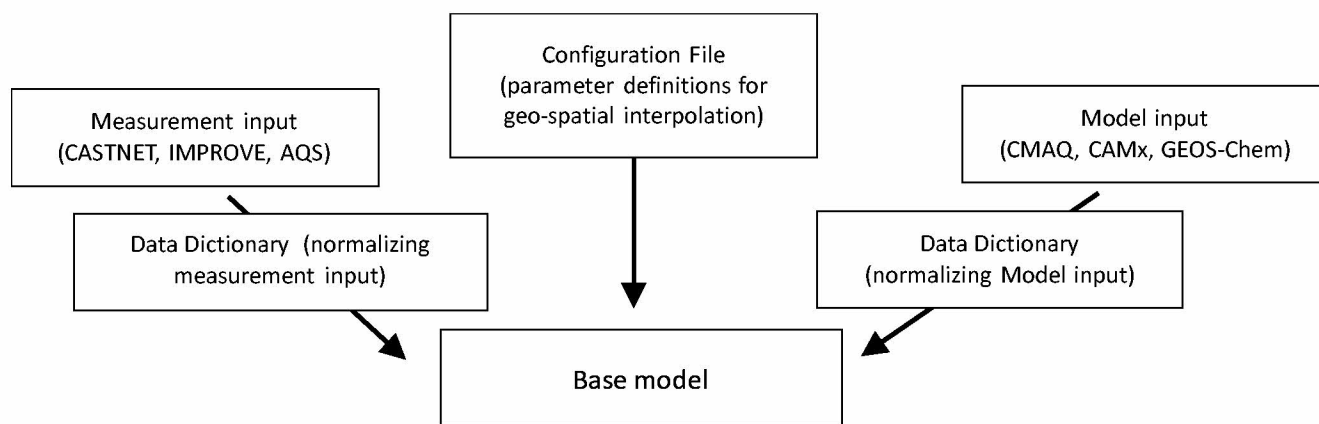


Figure 3. Proposed flow schematic for TDep application scripting process.

Task 3. Script transcription of base model according to the framework established in Task 2.

Estimated time: 300 hours.

The contractor shall work with the TOPO to transcribe the existing ArcInfo AML scripts according to the framework and plans established in Task 2.

All steps will have quality control and quality assurance procedures and bug fixes. The TOPO will take an active role in the accuracy assessment.

Task 4. Development of centralized input parameter configuration file.

Estimated time: 80 hours.

The contractor shall work with the TOPO to develop a centralized input parameter configuration file. The centralized configuration file should be developed to provide a platform where users can easily set and adjust modeling options and both global and local parameters. The current script has these parameters buried within nested subroutines and must be set at multiple points in the code. The configuration file should be well-documented and organized by process. Parameters should be set to a default value. Documentation should include the available options and instructions on how new options can be added into the script. Local parameters should be identified with their specific function and scripting step to avoid confusion.

Examples of parameters that should be included in the configuration file are:

- settings for geo-spatial interpolation methods (e.g. Inverse Distance Weighting (IDW), optimal interpolation, or Bayesian interpolation) and its needed parameters (e.g. radius of influence for specific species, measurement-model fusion weighting factors).
- Settings for output grids (e.g. datums, mapping domains, and geospatial projections (currently GRS_1980 and in need of additional options (e.g. NAD_1983)). Output grids should be non-Arc dependent files (e.g. geo TIF) so that the code is accessible to users without Arc licenses.
- Settings for output images (e.g. .png, .jpg, .pdf). Currently these formats include options such as border projections, sun-angle elevations, and selectable colormaps (with standard options to maintain consistency between maps).

Current mapping scripts can be run in batch mode or specifically for input years and species, we wish to preserve this flexibility.

Task 5. Development of data dictionary module for input measurement data.

Estimated time: 70 hours.

The contractor shall work with the TOPO to develop a data dictionary to accept standardized input measurement data. The data dictionary should be able to interact with the CAMD Oracle database. To reduce the level of effort, all needed input data transformation steps to get to a standardized input format should be kept in the existing SQL format within the database and will be maintained by EPA. The standardized data format should be clearly defined. The data dictionary should be extensible enough to allow the potential addition of sub-modules and changes to the standardized data format. Documentation should be added to describe how modifications could be made.

Task 6. Development of data dictionary module for input modeling data.

Estimated time: 70 hours.

The contractor shall work with the TOPO to develop a data dictionary to accept standardized input modeling data. The data dictionary should be able to interact with the CAMD Oracle database. To reduce the level of effort, all needed input data transformation steps to get to a standardized input format should be kept in the existing SQL format within the database and will be managed by EPA. The standardized data format should be clearly defined. The data dictionary should be extensible enough to allow the potential addition of sub-modules and changes to the standardized data format. Documentation should be added to describe how modifications could be made.

4.0 DELIVERABLES AND SCHEDULE

4.1 Proposal

The contractor shall deliver a Task Order Technical Proposal & Cost Estimate in accordance with clause B.7 Task Order Ordering Procedures of the contract. The proposal shall be submitted 21 days after the receipt of the SOW.

4.2 Monthly Progress Report

The contractor shall prepare a short summary of monthly progress by the 15th of each month summarizing the status of the project, documentation of finished sections, issues encountered or expected, hours reported, and an outline of the planned work for the next reporting period and an estimate of the cost. The contractor will attend biweekly conference call with the TOPO to establish a project schedule and to discuss progress. The periodicity of the call will be revisable per technical direction as the project progresses.

4.3. Scripts and Documentation

The contractor shall deliver a final robust script including documentation and proper error handling to enable users to make modifications to the script once the task order has ended. The

final product will be open-source and made available via code sharing platforms such as GitHub. The functional script should be available in a batch mode, where multiple species and years can be directed toward the creation and writing to directories, but also as a stand-alone module, where single datasets can be processed for more of a testing mode.

The contractor shall develop a 'readme' file describing the process for creating the maps using the updated scripts. The updated scripts shall be fully documented with comments to explain scripting steps to enable editing once the project is done. The final product will be open-source and made available via code sharing platforms such as GitHub. The functional script should be available in a batch mode, where multiple species and years can be directed toward the creation and writing to directories, but also can be run as a stand-alone module, where single datasets can be processed for more of a testing mode. The contractor shall work with the TOPO to make sure there is a clear understanding of the updated script process.

Output grids produced with the new scripts shall be meet a performance criteria in a grid-cell by grid-cell comparison with existing grids produced using the same input datasets. With the same input data, differences should be mostly attributed to "mechanical" issues of grid projections and grid cell alignment, and thus the performance criteria should be within $\pm 5\%$ of total deposition values exceeding $0.25 \text{ kg species ha}^{-1}$ and within $\pm 2\%$ of values exceeding $0.5 \text{ kg species ha}^{-1}$, but is subject to revision by technical direction.

4.4. Proposed Schedule

The contractor will include a modified schedule based on the proposed schedule outlined below for completion of tasks and progress.

Table 1. Proposed schedule for Task Completion and Progress

Task	Deliverable	Incremental Schedule
1	1.1: Submit draft TP&CE broken down by task.	Due 2 weeks after receipt of task order
1	1.2: Revised TP&CE addressing TOPO comments.	Due 1 week after approval of Deliverable 1.1
2	2.1: Submit draft framework description document indicating the overall transcribed model structure and describing how major components from Task 4, 5, & 6 (the central script configuration file and input data dictionary modules) will function.	Due 2 weeks after approval of Deliverable 1.2.
3	3.1: Submit initial scripts for transcribed base model and documentation of where major components will fit in.	Due 8 weeks after approval of Deliverable 2.1.
4	4.1: Submit initial scripts for script configuration file for review and discussion.	Due (along with Deliverables 5.1 and 6.1) 12 weeks after approval of Deliverable 2.1.

5	5.1: Submit initial scripts for input measurement data dictionary module.	Due (along with Deliverables 4.1 and 6.1) 12 weeks after approval of Deliverable 2.1.
6	6.1: Submit initial scripts for input modeling data dictionary module.	Due (along with Deliverables 4.1 and 5.1) 12 weeks after approval of Deliverable 2.1.
3	3.2: Submit revised and working draft scripts and the revised draft 'readme' file to run MMF output in its entirety with component modules.	Due 20 weeks after approval of Deliverable 3.1.
3	3.3: Submit revised TDep MMF method output addressing TOPO comment and meeting accuracy and reproducibility goals	Due 2 weeks after approval of Deliverable 3.2.
3	3.4: Submit "user modification" chapter to 'readme' file with protocol and checklist for additions to TDep MMF application.	Due 2 weeks after approval of Deliverable 3.3.
3	3.5: Submit final documented script and full documentation	Due 4 weeks after approval of Deliverable 3.4.

5.0 REFERENCES

Meyers, T.P., Finkelstein, P., Clarke, J., Ellestad, T.G., Sims, P.F. 1998. A multilayer model for inferring dry deposition using standard meteorological measurements. J. Geophys. Res., 103, D17, 22645-22661. <https://doi.org/10.1029/98JD01564>.

NADP, 2015. National Atmospheric Deposition Program Total Deposition Science Committee (TDep). Total Deposition Estimates Using a Hybrid Approach with Modeled and Monitoring Data. [ftp://ftp.epa.gov/castnet/tdep/Total Deposition Documentation current.pdf](ftp://ftp.epa.gov/castnet/tdep/Total%20Deposition%20Documentation%20current.pdf). Accessed May, 2019.

Schwede, D.B., Lear, G.G., 2014. A novel hybrid approach for estimating total deposition in the United States. Atmospheric Environment 92, 207-220.

6.0 APPENDIX: DETAILS FOR THE CURRENT PROCESS FOR CREATING THE ANNUAL TDEP MAPS

The steps for creating the TDep maps are listed below. Included are references to the various AML and perl scripts, their functionality, the input data needed, and the output data generated, and their respective storage locations.

Table A1. List of Steps in the TDep mapping process along with the current script and Input and output data.

#	Step	Script	Input	Output
1	Download and interpolate weekly ambient measurement data into rasters	SQL database processing; tdep_total.aml	Table in CAMD ORACLE database to stage measured weekly data from different monitoring networks (TDEP.Measured_week)	weekly measured concentration grids
2	Create annual wet deposition	SQL database processing; annual_nadp.aml	<ul style="list-style-type: none"> PRISM precipitation data downloaded from the web in ASCII format Tables or views in CAMD ORACLE database to stage measured precipitation data (NADP.PRECIP_ANNUAL_V) and measured concentration data (NADP.WETDEP_ANNUAL) 	<ul style="list-style-type: none"> Calculated annual measured concentration in precipitation, wet deposition, and measured precipitation grids. Calculated annual 'adjusted' wet deposition and precipitation grids. Maps for these annual grid products.
3	Retrieve extracted layers and variables from hourly NetCDF model output files into subsetted NetCDF files	-	-	-
4	Conversion and preparation of weekly CMAQ Arc grids from subsetted hourly netCDF files	-	-	-
a	Download, inventory, manage, and archive hourly extracts in NetCDF format	-	EPA ORD ATMOS Server	Hourly netCDF files
b	Extract hourly CMAQ values from NetCDF and aggregate into weekly CMAQ raster files	netcdf_wtdvd.pl	Hourly netCDF files for all types=(aconc, ddep, depv, ions vdwtd)	weekly aggregate CMAQ grids in ASCII for all types=(aconc, ddep, depv, ions, vdwtd)
c	Import the CMAQ ascii grids into Arc grids.	tdep_asciigrd.aml	weekly aggregate CMAQ grids in ASCII for all types	weekly aggregate CMAQ grids in Arc format for all types
d	Sum fractions of ions and aerosol components into weekly particle dry deposition grids	tdep_cmaqdep.aml; tdep_particle_ratios.aml	Accounting for and summing fractions in aerosols (i for atkinson accumulation; j for 1 to 10 um; k for coarse fraction) in CMAQ dry deposition	Summed weekly aggregate CMAQ grids considering aerosol fractions and ion ratios in Arc format for: type=(aconc, ions)
5	Calculate dry deposition from network concentration and CMAQ dry deposition velocity grids	tdep_concdep.aml	<ul style="list-style-type: none"> Weekly concentration grids (i.e. Step 1). CMAQ weekly aggregates (i.e. Step 4d) for Vd and aerosol ratios. 	<ul style="list-style-type: none"> Weekly aggregate CMAQ deposition velocity grids (<var>vdw). These are unchanged from the input Vd for the gases, but are multiplied by aerosol ratios for the aerosol components. Calculated weekly dry deposition grids (<var>dw).
6	Adjusting the CMAQ dry deposition grids for measurement bias	-	-	-
a	Calculate average model bias	tdep_bias.aml; gridcov.aml; mapgrid.aml	Average model bias difference from measurements are calculated in SQL in a set of materialized views (last is TDEP.CMAQ_BIAS_ (season or week))	<ul style="list-style-type: none"> grids of average model to measurement bias maps of average model to measurement bias
b	Adjust CMAQ deposition grids for bias	tdep_adjust.aml (sub-routines: ddep, ions)	<ul style="list-style-type: none"> bias grids from Step 6a CMAQ weekly dry deposition grids (ddep) 	adjusted cmaq dry deposition grids (ddadj)
7	Create combined annual dry deposition grid from CMAQ and measured concentrations	-	-	-
a	Combine weekly deposition from CMAQ and measured deposition.	tdep_combine.aml	<ul style="list-style-type: none"> Grid weighting factor for the CMAQ grid (Step 1 output; <var>wtq) Grid weighting factor for measurement grid (Step 1 output; <var>wtm) Adjusted CMAQ dry deposition grid (Step 6b output) in cmaq/ddadj) Dry deposition grid from measured concentrations (Step 5 output; <var>dw) 	Combined dry deposition grid from CMAQ and concentration (<var>_dw)
b	Accumulate the deposition for each week, including the annual raster file	tdep_cumm.aml	Step 7a output	cumulative combined deposition for measured variables for each week (<var>_dwcum)
8	Calculate Total Deposition for the year	tdep_total.aml: Subroutine: total	<ul style="list-style-type: none"> 52nd week of cumulative weekly grids (Step 7b output) Annual 'adjusted' wet deposition grids (Step 2 output; <var>_d) Molar mass percentages set in 'CONSTANTS' sub-routine. Non-adjusted CMAQ dry deposition grids for non-measured N components (HONO, N2O5, NO, NO2 ntr, OPAN, PAN, PANx) and component of NH3 emitted and deposited gridmask from OAKdata/arc/src/grids/us48 	Annual grids for sums and percentages of total, oxidized, reduced, wet, dry components, and precipitation
9	Export the data points from CASTNET and NTN and domain statistics to the CAMD ORACLE database	tdep_total.aml: Subroutines: castnet, ntn, STATS	Output from Step 8	<ul style="list-style-type: none"> Gridded total deposition data at CASTNET or NTN site locations exported to CAMD SQL database table (TDEP.CASTNET ANNUAL) Domain statistics from the Total deposition grids stored in CAMD SQL database table (TDEP.GRID_STATS)
10	Calculate 3-year averages for the total deposition grids	tdep_total.aml: Subroutine: average	Output from Step 9	'year from' to 'year to' averaged total deposition grids
11	Plot/format maps from annual raster files	tdep_total.aml: Subroutine: maps, hillshades; tdep_maps.aml, tdep_hillshades.aml	Output from Step 8 and 9	.png and .jpg images and folder structures
12	Export and distribute maps and annual raster files	tdep_total.aml: Subroutine: export, species	Output from Steps 8 through 11	reorganizes the export folder structure to group .png and .jpg images and .e00 files by species on the outgoing FTP

Table A2. List of Arc-specific commands and their function that will need updating in an open-source scripting language.

AML Script	Command	Explanation
ascii2grid.aml	asciigrid	Convert ESRI ascii file to ESRI grid
ascii2grid.aml	project grid	reproject a grid file
-	-	Convert Arc INFO prj file into a compatible projection file
gridavg.aml	grid mean	Calculate the mean of variable numbers of grids
gridcov.aml	IDW	inverse distance weighted interpolation
gridcov.aml	trend	create a trend interpolation
gridcov.aml	reselect	reselect points in a coverage
gridcov.aml	grid focalmean	calculates statistics for focal areas
gridcov.aml	grid selectmask	select grid cells using a grid mask
gridmaps.aml	several ARC-specific commands that will have own commands in Arc Py	in general. Capability is to create .pngs of grids, arcs, and polygons.
gridmaps.aml	several ARC-specific commands that will have own commands in Arc Py	Create .pngs of grids, arcs, and polygons using user-defined shape/symbols
gridmaps.aml	dbms cursor	Manage ORACLE cursors.
gridpoints.aml	several ARC-specific commands that will have own commands in Arc Py	create point coverages from ORACLE tables or ascii files containing Lats & Longs
prism.aml	latticespot	selecting grid values at coverage points
prism.aml	pointdist	get the distance of grid cells to the nearest coverage point
prism.aml	math (e.g. POW)	power function or math calculations on grids
prism.aml	logic (e.g. CON)	performing logic on grids on a cell by cell basis
prism.aml	dbmsexecute	executing SQL commands from within interface (or script)
wetdep.aml	-	-
(currently PL script)	-	convert a netcdf layer to a grid
tdepcombine.aml	-	-
tdephillshade.aml	hillshade	creates a shaded relief grid from a grid by considering sun illumination angle and shadows

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	-	\$100,000.00	\$100,000.00
Total	-	\$100,000.00	\$100,000.00

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$119,436.00
Total	-	-	\$119,436.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. P00001		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO.	
5. PROJECT NO. (If applicable) 3016		6. ISSUED BY HQAD		7. ADMINISTERED BY (If other than Item 6) CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972		(x)		9A. AMENDMENT OF SOLICITATION NO.	
CODE 038086125		FACILITY CODE		9B. DATED (SEE ITEM 11)	
		x		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 68HERH20F0107	
				10B. DATED (SEE ITEM 13) 01/07/2020	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) FAR 52.217-9 Option to Extend the Term of the Contract

E. IMPORTANT: Contractor ☐ is not ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: 038086125

The purpose of this modification is to extend this task order by 4 months at no additional cost to the government. The period of performance end date is hereby changed from July 8, 2020 to November 8, 2020.

TOCOR: Greg Beachley

LIST OF CHANGES:

Reason for Modification: Supplemental Agreement for work within scope

Period Of Performance End Date changed from 08-JUL-20 to 08-NOV-20

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Michael C. Fox	
15B. CONTRACTOR/OFFEROR Kemp Howell Digitally signed by Kemp Howell Date: 2020.06.12 10:44:56 -0400 (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA <i>Michael Fox</i> (Signature of Contracting Officer)	16C. DATE SIGNED 06/12/2020

Previous edition unusable

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH20F0107/P00001	2	2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711 Period of Performance: 01/08/2020 to 11/08/2020				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 2	
2. AMENDMENT/MODIFICATION NO. P00002		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO. PR-OAR-20-01345		5. PROJECT NO. (If applicable) 3016	
6. ISSUED BY HQAD		CODE HQAD		7. ADMINISTERED BY (If other than Item 6)		CODE	
US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972							
CODE 038086125				FACILITY CODE			
				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				x 10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 68HERH20F0107			
				10B. DATED (SEE ITEM 13) 01/07/2020			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required) See Schedule Net Increase: \$19,436.00							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) FAR 52.217-9 Option to Extend the Term of the Contract						
E. IMPORTANT: Contractor <input type="checkbox"/> is not <input checked="" type="checkbox"/> is required to sign this document and return <u>1</u> copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125 The purpose of this modification is to extend this task order by 2 months at no additional cost to the government. The period of performance end date is being changed from November 8, 2020 to January 7, 2021. Funding in the amount of \$19,436.00 is being obligated to fully-fund this task order. TOCOR: Greg Beachley LIST OF CHANGES: Reason for Modification: Supplemental Agreement for work within scope Period Of Performance End Date changed from 08-NOV-20 to 07-JAN-21 Obligated Amount for this Modification: \$19,436.00 New Total Obligated Amount for this Award: \$119,436.00 Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
Kemp Howell <small>Digitally signed by Kemp Howell Date: 2020.09.04 09:49:42 -04'00'</small> <small>(Signature of person authorized to sign)</small>				 <small>(Signature of Contracting Officer)</small>		09/04/2020	

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH20F0107/P00002	2	2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Incremental Funded Amount changed: from \$100,000.00 to \$119,436.00 CHANGES FOR LINE ITEM NUMBER: 1 Obligated Amount for this Modification: \$19,436.00 Incremental Funded Amount changed from \$100,000.00 to \$119,436.00</p> <p>NEW ACCOUNTING CODE ADDED: Account code: 20-21-C-58D5-000A45-2505-2058DC0079-001 Beginning FiscalYear 20 Ending Fiscal Year 21 Fund (Appropriation) C Budget Organization 58D5 Program (PRC) 000A45 Budget (BOC) 2505 Job # (Site/Project) Cost Organization DCN-LineID 2058DC0079-001 Amount: \$19,436.00 Subject To Funding: N Payment Address: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 01/08/2020 to 01/07/2021</p>				

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS <i>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30</i>				1. REQUISITION NUMBER PR-OAR-20-00777		PAGE OF 1 10							
2. CONTRACT NO. EP-W-16-015			3. AWARD/ EFFECTIVE DATE		4. ORDER NUMBER 68HERH20F0331		5. SOLICITATION NUMBER						
							6. SOLICITATION ISSUE DATE						
7. FOR SOLICITATION INFORMATION CALL:			a. NAME Michael Fox			b. TELEPHONE NUMBER (No collect calls) 202-564-2550		8. OFFER DUE DATE/LOCAL TIME ET					
9. ISSUED BY HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460			CODE HQAD		10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED OR <input type="checkbox"/> SET ASIDE: % FOR: <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS <input type="checkbox"/> WOMEN-OWNED SMALL BUSINESS (WOSB) ELIGIBLE UNDER THE WOMEN-OWNED SMALL BUSINESS PROGRAM <input type="checkbox"/> EDWOSB <input type="checkbox"/> 8(A) NAICS: 541620 SIZE STANDARD: \$15.0								
11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input checked="" type="checkbox"/> SEE SCHEDULE			12. DISCOUNT TERMS			13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		13b. RATING					
								14. METHOD OF SOLICITATION <input type="checkbox"/> RFQ <input type="checkbox"/> IFB <input type="checkbox"/> RFP					
15. DELIVER TO OAR/OAP US Environmental Protection Agency 1200 Pennsylvania Avenue NW Mail Code: 62101J OAR/OAP Washington DC 20460			CODE OAR/OAP		16. ADMINISTERED BY HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460				CODE HQAD				
17a. CONTRACTOR/OFFEROR WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972 (b)(4) TELEPHONE NO.			CODE 038086125		FACILITY CODE		18a. PAYMENT WILL BE MADE BY RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711						
							CODE RTP FMC						
17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER						18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM							
19. ITEM NO.		20. SCHEDULE OF SUPPLIES/SERVICES				21. QUANTITY		22. UNIT		23. UNIT PRICE		24. AMOUNT	
		DUNS Number: 038086125 Title: Routine Indeterminate Operating Costs (4001) This task order is issued in accordance with Task Order Ordering Procedures and hereby incorporates the base contract terms and conditions by reference. The effective date for performance to commence is July 9, 2020. The Contractor shall perform in accordance with Attachment A - Statement of Work (6 pages) and the accepted <i>(Use Reverse and/or Attach Additional Sheets as Necessary)</i>											
25. ACCOUNTING AND APPROPRIATION DATA See Schedule								26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$289,996.00					
<input type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA <input checked="" type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA								<input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED. <input type="checkbox"/> ARE <input checked="" type="checkbox"/> ARE NOT ATTACHED.					
<input type="checkbox"/> 28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED.								<input type="checkbox"/> 29. AWARD OF CONTRACT: _____ OFFER DATED _____. YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:					
30a. SIGNATURE OF OFFEROR/CONTRACTOR						31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER) ELECTRONIC SIGNATURE							
30b. NAME AND TITLE OF SIGNER (Type or print)				30c. DATE SIGNED		31b. NAME OF CONTRACTING OFFICER (Type or print) Michael C. Fox				31c. DATE SIGNED 07/02/2020			

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
0001	<p>technical proposal and cost estimate dated May 29, 2020 (6 pages) in the amount of \$289,996.00.</p> <p>This is a Time-and-Materials (T&M) task order with a total ceiling price of \$289,996.00, which the Contractor is not authorized to exceed. The Contractor exceeds at its own risk. The total obligated/funded ceiling amount for this order is currently \$100,000.00. This order is incrementally funded as detailed in Attachment B Summary of Amounts and Ceilings and Attachment B is hereby incorporated (1 page).</p> <p>Contracting Officer's Representative (COR) for this task order: Macy Taylor, (202) 343-9183, Macy.Taylor@epa.gov</p> <p>Alternate COR: Melissa Puchalski, (202) 343-9882, Puchalski.Melissa@epa.gov</p> <p>The services of this order are for severable.</p> <p>TOCOR: Macy Taylor Period of Performance: 07/09/2020 to 07/08/2021</p> <p>Routine Indeterminate Operating Costs Incrementally Funded Amount: \$100,000.00</p> <p>Continued ...</p>				289,996.00

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE		32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE			32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
			32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
33. SHIP NUMBER	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT	37. CHECK NUMBER
<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL			<input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	
38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY		
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT		42a. RECEIVED BY (<i>Print</i>)		
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER		42b. RECEIVED AT (<i>Location</i>)		
		42c. DATE REC'D (YY/MM/DD)		42d. TOTAL CONTAINERS

NAME OF OFFEROR OR CONTRACTOR
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Accounting Info: 19-20-C-58D5-000A45-2505-2058DC0041-001 BFY: 19 EFY: 20 Fund: C Budget Org: 58D5 Program (PRC): 000A45 Budget (BOC): 2505 DCN - Line ID: 2058DC0041-001 Funding Flag: Complete Funded: \$100,000.00				

ATTACHEMNT A

Statement of Work

Title: Routine Indeterminate Operating Costs (4001)
Contractor: Wood PLC
Contract #: EP-W-16-015
Task Order #: 68HERH20F0331
Period of Performance: 7/9/2020 to 7/8/2021

EPA Key Personnel**Task Order Project Officer (TOPO)/Contract Level Project Officer (PO):**

Taylor Macy
Clean Air Markets Division (OAP/OAR/CAMD)
1200 Pennsylvania Ave., NW
Mail Code 6204M
Washington, DC 20460
phone: (202) 343-9183
email: macy.taylor@epa.gov

Alternate TOPO:

Melissa Puchalski
Clean Air Markets Division (OAP/OAR/CAMD)
1200 Pennsylvania Ave., NW
Mail Code 6204M
Washington, DC 20460
phone: (202) 343-9882
email: puchalski.melissa@epa.gov

Contracting Officer (CO):

Michael Fox
Contracting Officer
Administrative Contract Service Center
1200 Pennsylvania Ave N.W.
Mail Code 3803R
Washington DC 20460
phone: (202) 564-2550
email: fox.michael@epa.gov

STATEMENT OF WORK

I. INTRODUCTION

The Clean Air Status and Trends Network (CASTNET) is a long-term environmental monitoring network that measures changes in ambient air quality and assesses atmospheric deposition over broad geographic regions of the U.S. (<https://www.epa.gov/castnet>). Operating since 1987, CASTNET has evolved into a robust regional monitoring program which currently consists of approximately 95 monitoring stations nationwide. The Environmental Protection Agency (EPA) coordinates the operation of the network in cooperation with numerous federal, tribal, state and local partners.

The primary monitoring objectives of CASTNET are to:

- Provide high quality data on atmospheric deposition, rural ground level ozone and other forms of atmospheric pollution;
- Support the primary and secondary ozone NAAQS and provide data on NAAQS compliance in rural areas;
- Monitor the status and trends in regional air quality and atmospheric deposition;
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and atmospheric deposition;
- Improve our understanding of PM and ozone formation;
- Validate and improve atmospheric models;
- Provide data for health-based research and epidemiology studies;
- Assess the effectiveness of EPA's emission reduction programs; and
- Support science and ecosystem studies.

CASTNET sites measure weekly average concentrations of sulfate (SO_4^{2-}), nitrate (NO_3^-), ammonium (NH_4^+), sulfur dioxide (SO_2), nitric acid (HNO_3), chloride (Cl^-) and the base cations (Na^+ , K^+ , Mg^{2+} and Ca^{2+}) using a 3-stage filter pack. In addition, each site may make ancillary measurements, including hourly ozone (O_3), hourly meteorology, ammonia (NH_3) gas using passive devices, and trace-level gases. Trace-level gas monitors include reactive oxidized nitrogen (NO_y), nitric oxide (NO), sulfur dioxide (SO_2) and carbon monoxide (CO). CASTNET O_3 , meteorological, and trace gas measurements follow the requirements in the Code of Federal Regulations (CFR) and EPA's Quality Assurance Handbook.

II. PURPOSE

The primary purpose of this task order is to provide for the indeterminate costs of routine activities and provisions associated with operating the CASTNET base program. Examples of these costs include site utilities, utility infrastructure updates, land leases, and travel associated with management meetings. The Task Order Project Officer shall provide technical direction for performance of additional specific tasks under this task order.

III. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this task order are consistent with the activities authorized in CLIN 22 (Level of Effort/Special Studies) from Attachment 1 of the contract's Statement of Work for contract EP-W-16-015 (CASTNET V).

IV. TECHNICAL DIRECTION

1. Prepare a Technical Proposal & Cost Estimate

The Contractor shall prepare a Task Order Technical Proposal and Cost Estimate (TP&CE) in accordance with the terms and conditions of contract clauses B.1 entitled Fixed Rates for Services and submit it to EPA 10 days after receipt of this SOW.

2. Provide Utility & Infrastructure Costs for EPA Operated CASTNET Sites

The contractor shall be responsible for managing and coordinating the payment of on-going site land leases, rent, utilities, and phone and/or Internet services for the EPA-sponsored CASTNET sites. A list of the sites and site locations is included in Attachment 1.

3. Travel to Meetings

A. Conferences

- a. Upon technical direction from the EPA Project Officer, the contractor may travel to meetings with EPA (or their designee) for management consultations and/or to provide technical support necessary for the day-to-day operation of the network. The contractor may travel to conferences to present technical papers related to CASTNET with EPA Project Officer approval. The cost estimate should be based on 8-person trips and 16 days of per diem.

B. CASTNET Summit

Per the requirements in OMB Memorandum M-12-12, Promoting Efficient Spending to Support Agency Operations, May 11, 2012 and Section 3003 of the Continuing Resolution P.L 113-6, March 2013, the Contractor must track the cost of travel, facility expenses (meeting space), audio/visual expenses, and labor hour costs associated with preparing for the annual CASTNET summit. The COR will work with the contractor to ensure the correct conference code is applied to invoices for tracking. Within 60 days the contractor shall notify the COR of actual expenses incurred for reporting to EPA's Office of Inspector General. The cost estimate should be based on 8-person trips and 16 days of per diem.

V. DELIVERABLES AND SCHEDULE

All deliverables shall be reviewed and quality assured during the performance of this task order. Deliverables should be submitted to EPA electronically.

1. Technical Proposal & Cost Estimate

The contractor shall deliver a Task Order Technical Proposal and Cost Estimate in accordance with Attachment 12 Task Order Ordering Procedures of the contract (EP-W-16-015). The proposal shall be submitted 10 days after receipt of the SOW.

2. Monthly Progress Report

The contractor shall prepare and submit a monthly progress report by the 15th of each month summarizing the progress made, issues encountered or expected, work planned for the next reporting period and costs. These reports shall comply with contract clauses F.1 Monthly Progress Report and F-5 Reports of Work.

Distribution of Deliverables:

Addressee
EPA Contracting Officer (Mike Fox)

Copies
1

EPA Task Order Project Officer (Taylor Macy)

1

EPA Alternate TOPO (Melissa Puchalski)

1

Attachment 1. Active EPA Sites (as of April 2020)

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	-	\$100,000.00	\$100,000.00
Total	-	\$100,000.00	\$100,000.00

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$289,996.00
Total	-	-	\$289,996.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 2	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P000001		See Block 16C		PR-OAR-20-01276		4001	
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
HQAD							
US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972							
				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				x 10A. MODIFICATION OF CONTRACT/ORDER NO.			
				EP-W-16-015			
				68HERH20F0331			
				10B. DATED (SEE ITEM 13)			
				07/02/2020			
CODE 038086125		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)				Net Increase:		\$60,000.00	
See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION						
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125							
The purpose of this modification is to obligate incremental funding in the amount of \$60,000.00 to this task order.							
TOCOR: Macy Taylor							
LIST OF CHANGES:							
Reason for Modification: Funding Only Action							
Obligated Amount for this Modification: \$60,000.00							
New Total Obligated Amount for this Award: \$160,000.00							
Incremental Funded Amount changed: from							
\$100,000.00 to \$160,000.00							
CHANGES FOR LINE ITEM NUMBER: 1							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
				ELECTRONIC SIGNATURE 		08/13/2020	
(Signature of person authorized to sign)				(Signature of Contracting Officer)			

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH20F0331/P00001	2	2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Obligated Amount for this Modification: \$60,000.00</p> <p>Incremental Funded Amount changed from \$100,000.00 to \$160,000.00</p> <p>NEW ACCOUNTING CODE ADDED:</p> <p>Account code:</p> <p>20-21-C-58D5-000A45-2505-2058DC0068-001</p> <p>Beginning FiscalYear 20</p> <p>Ending Fiscal Year 21</p> <p>Fund (Appropriation) C</p> <p>Budget Organization 58D5</p> <p>Program (PRC) 000A45</p> <p>Budget (BOC) 2505</p> <p>Job # (Site/Project)</p> <p>Cost Organization</p> <p>DCN-LineID 2058DC0068-001</p> <p>Amount: \$60,000.00</p> <p>Subject To Funding: N</p> <p>Payment Address:</p> <p>RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center (AA216-01)</p> <p>109 TW Alexander Drive</p> <p>www2.epa.gov/financial/contracts</p> <p>Durham NC 27711</p> <p>Payment:</p> <p>RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center (AA216-01)</p> <p>109 TW Alexander Drive</p> <p>www2.epa.gov/financial/contracts</p> <p>Durham NC 27711</p> <p>Period of Performance: 07/09/2020 to 07/08/2021</p>				

EP-W-16-015
Order#: 68HERH20F0331 (4001)
Modification#: P00001

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	\$100,000.00	\$60,000.00	\$160,000.00
Total	\$100,000.00	\$60,000.00	\$160,000.00

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$289,996.00
Total	-	-	\$289,996.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS <i>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30</i>				1. REQUISITION NUMBER PR-OAR-20-00780		PAGE OF 1 8	
2. CONTRACT NO. EP-W-16-015		3. AWARD/ EFFECTIVE DATE 07/09/2020		4. ORDER NUMBER 68HERH20F0332		5. SOLICITATION NUMBER	
6. SOLICITATION ISSUE DATE							
7. FOR SOLICITATION INFORMATION CALL:		a. NAME Michael Fox			b. TELEPHONE NUMBER (No collect calls) 202-564-2550		8. OFFER DUE DATE/LOCAL TIME ET
9. ISSUED BY HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460				10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED OR <input type="checkbox"/> SET ASIDE: % FOR: <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS </div> <div> <input type="checkbox"/> WOMEN-OWNED SMALL BUSINESS (WOSB) ELIGIBLE UNDER THE WOMEN-OWNED SMALL BUSINESS PROGRAM <input type="checkbox"/> EDWOSB <input type="checkbox"/> 8(A) </div> <div> NAICS: 541620 SIZE STANDARD: \$15.0 </div> </div>			
11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input checked="" type="checkbox"/> SEE SCHEDULE		12. DISCOUNT TERMS		13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		13b. RATING	
15. DELIVER TO OAR/OAP US Environmental Protection Agency 1200 Pennsylvania Avenue NW Mail Code: 62101J OAR/OAP Washington DC 20460		16. ADMINISTERED BY HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460		14. METHOD OF SOLICITATION <input type="checkbox"/> RFQ <input type="checkbox"/> IFB <input type="checkbox"/> RFP			
17a. CONTRACTOR/OFFEROR CODE 038086125		FACILITY CODE		18a. PAYMENT WILL BE MADE BY RTP FMC			
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972				RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711			
TELEPHONE NO. (b)(4)				17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER			
18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM							
19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES			21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	DUNS Number: 038086125 Title: Support for NADP Non-routine Operations and Shipping (4002) This task order is issued in accordance with Task Order Ordering Procedures and hereby incorporates the base contract terms and conditions by reference. The effective date for performance to commence is July 9, 2020. The Contractor shall perform in accordance with Attachment A - Statement of Work (4 pages) and the accepted <i>(Use Reverse and/or Attach Additional Sheets as Necessary)</i>						
25. ACCOUNTING AND APPROPRIATION DATA See Schedule						26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$34,804.00	
<input type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED. <input checked="" type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA <input type="checkbox"/> ARE <input checked="" type="checkbox"/> ARE NOT ATTACHED.							
<input type="checkbox"/> 28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED.				<input type="checkbox"/> 29. AWARD OF CONTRACT: _____ OFFER DATED _____. YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:			
30a. SIGNATURE OF OFFEROR/CONTRACTOR				31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER) <div style="text-align: right;">ELECTRONIC SIGNATURE</div>			
30b. NAME AND TITLE OF SIGNER (Type or print)		30c. DATE SIGNED		31b. NAME OF CONTRACTING OFFICER (Type or print) Michael C. Fox		31c. DATE SIGNED 06/29/2020	

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
0001	<p>technical proposal and cost estimate dated May 29, 2020 (7 pages) in the amount of \$34,804.00.</p> <p>This is a Time-and-Materials (T&M) task order with a total ceiling price of \$34,804.00, which the Contractor is not authorized to exceed. The Contractor exceeds at its own risk. The total obligated/funded ceiling amount for this order is currently \$5,000.00. This order is incrementally funded as detailed in Attachment B Summary of Amounts and Ceilings and Attachment B is hereby incorporated (1 page).</p> <p>Contracting Officer's Representative (COR) for this task order: Macy Taylor, (202) 343-9183, Macy.Taylor@epa.gov</p> <p>Alternate COR: Melissa Puchalski, (202) 343-9882, Puchalski.Melissa@epa.gov</p> <p>The services of this order are for severable. TOCOR: Macy Taylor Period of Performance: 07/09/2020 to 07/08/2021</p> <p>Support for NADP Non-routine Operations and Shipping Incrementally Funded Amount: \$5,000.00</p> <p>Continued ...</p>				34,804.00

32a. QUANTITY IN COLUMN 21 HAS BEEN

☐ RECEIVED ☐ INSPECTED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE		32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE			32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
			32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE	
33. SHIP NUMBER	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	37. CHECK NUMBER
<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL				
38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY		
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT		42a. RECEIVED BY (<i>Print</i>)		
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER		41c. DATE	42b. RECEIVED AT (<i>Location</i>)	
			42c. DATE REC'D (YY/MM/DD)	42d. TOTAL CONTAINERS

NAME OF OFFEROR OR CONTRACTOR
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Accounting Info: 19-20-C-58D5-000A45-2505-2058DC0043-001 BFY: 19 EFY: 20 Fund: C Budget Org: 58D5 Program (PRC): 000A45 Budget (BOC): 2505 DCN - Line ID: 2058DC0043-001 Funding Flag: Complete Funded: \$5,000.00				

ATTACHMENT A**Statement of Work**

Title: Support for NADP Non-Routine Operations and Shipping
Contractor: Wood PLC
Contract #: EP-W-16-015
Task Order #: 68HERH20F0332
Period of Performance: 7/9/2020 to 7/8/2021

EPA Key Personnel**Task Order Project Officer (TOPO)/Contract Level Project Officer (PO):**

Taylor Macy
Clean Air Markets Division (OAP/OAR/CAMD)
1200 Pennsylvania Ave., NW
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Washington, DC 20460
phone: (202) 343-9183
email: macy.taylor@epa.gov

Alternate TOPO:

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email: puchalski.melissa@epa.gov

Contracting Officer (CO):

Michael Fox
Contracting Officer
Administrative Contract Service Center
1200 Pennsylvania Ave N.W.
Mail Code 3803R
Washington DC 20460
phone: (202) 564-2550
email: fox.michael@epa.gov

STATEMENT OF WORK

I. INTRODUCTION

The Clean Air Status and Trends Network (CASTNET) is a long-term environmental monitoring network that measures changes in ambient air quality and assesses atmospheric deposition over broad geographic regions of the U.S. (<https://www.epa.gov/castnet>). Operating since 1987, CASTNET has evolved into a robust regional monitoring program which currently consists of approximately 95 monitoring stations nationwide. The Environmental Protection Agency (EPA) coordinates the operation of the network in cooperation with numerous federal, tribal, state and local partners.

The primary monitoring objectives of CASTNET are to:

- Provide high quality data on atmospheric deposition, rural ground level ozone and other forms of atmospheric pollution;
- Support the primary and secondary ozone NAAQS and provide data on NAAQS compliance in rural areas;
- Monitor the status and trends in regional air quality and atmospheric deposition;
- Assess and report on geographic patterns and long-term, temporal trends in ambient air pollution and atmospheric deposition;
- Improve our understanding of PM and ozone formation;
- Validate and improve atmospheric models;
- Provide data for health-based research and epidemiology studies;
- Assess the effectiveness of EPA's emission reduction programs; and
- Support science and ecosystem studies.

CASTNET sites measure weekly average concentrations of sulfate (SO_4^{2-}), nitrate (NO_3^-), ammonium (NH_4^+), sulfur dioxide (SO_2), nitric acid (HNO_3), chloride (Cl^-) and the base cations (Na^+ , K^+ , Mg^{2+} and Ca^{2+}) using a 3-stage filter pack. In addition, each site may make ancillary measurements, including hourly ozone (O_3), hourly meteorology, ammonia (NH_3) gas using passive devices, and trace-level gases. Trace-level gas monitors include reactive oxidized nitrogen (NO_y), nitric oxide (NO), sulfur dioxide (SO_2) and carbon monoxide (CO). CASTNET O_3 , meteorological, and trace gas measurements follow the requirements in the Code of Federal Regulations (CFR) and EPA's Quality Assurance Handbook.

II. PURPOSE

The primary purpose of this task order is to provide for site operator support for the National Atmospheric Deposition Program's (NADP's) networks outside of the support provided through the CASTNET Base Program and CASTNET Tribal Base Program (Task Orders 4003 and 4004, respectively). The purpose of this task order is to provide for non-routine support associated with operating NADP sites that are sponsored by EPA's Clean Air Markets Division (CAMD).

Additionally, under this Task Order the contractor shall prepare and purchase the shipping labels, as well as cover the freight charges associated with using the shipping labels for NADP samples from sites supported by CAMD, but not covered under Task Orders 4003 and 4004. The sites that receive shipping labels are included in Table 2.

III. CONTRACT LEVEL STATEMENT OF WORK REFERENCE

The tasks to be performed under this task order are consistent with the activities authorized in Task 22 (Level of Effort) from the contract's Statement of Work.

IV. TECHNICAL DIRECTION

1. Prepare a Technical Proposal & Cost Estimate

The Contractor shall prepare a Task Order Technical Proposal and Cost Estimate (TP&CE) in accordance with the terms and conditions of contract clauses B.1 entitled Fixed Rates for Services and submit it to the EPA 10 days after receipt of this SOW.

2. Non-Routine Site Operator Support

The Contractor shall be responsible for supporting the EPA-sponsored CASTNET operators for NADP networks not supported by Task Orders 4003 and 4004 or for work not covered in the scope for Task Orders 4003 and 4004. Currently, this includes Mercury Deposition Network (MDN) site co-located with the Ann Arbor, MI CASTNET site (Table 1). Non-routine work at NADP sites co-located with CASTNET includes:

- A. Contacting potential site operators to review the responsibilities and time commitment required for installation and weekly and/or bi-weekly deployment of samplers;
- B. Supporting non-routine maintenance visits to make repairs, which range from minor maintenance to major repairs that may result from harsh weather conditions causing significant damage over time;
- C. Verify that co-located NADP equipment is working correctly during the regular semiannual CASTNET calibration visits; and
- D. Assisting the NADP Program Office with site status updates, including site location changes, site operator status changes, etc. for sites not included in the SOW for Task Orders 4003 and 4004.

Site operators supported by this task order will be responsible for:

- A. Installation of the sampling system, if not previously installed prior to the start of this task order;
- B. Routine sampling procedures, which involve sample change out every Tuesday; and
- C. Shipping samples collected to the NADP Central Analytical Laboratory at the Wisconsin State Laboratory of Hygiene at the University of Wisconsin.

Table 1 CASTNET Sites/Site Operators Funded for MDN Operations under Task Order 2

ANA115, MI

The contractor shall direct site operators to contact the NADP Program Office for questions, issues and problems related to the wet deposition sampling at CASTNET sites.

3. Sample Shipping

The contractor shall provide shipping labels to NTN sites where full site operator support is not required and to MDN sites supported by Task Order 4002, if required. For NTN this will include shipping for NTN bottles (or bags) once per week and bulk shipping for buckets every six weeks. For MDN, this will include shipping for sample coolers once per week. Direct freight costs associated with the use of the labels for shipping shall be included in the Contractor's cost estimate. Sites requiring shipping labels are included in Table 2.

Table 2 CASTNET Sites Requiring Shipping Labels

CO08	NTN	Four Mile Peak	US Forest Service
CO92	NTN	Sunlight Peak	US Forest Service
MI52	MDN	Ann Arbor	Lake Michigan Air Directors Consortium
MI94	NTN	Sault Ste Marie	US EPA Clean Air Markets Division
MN18	NTN	Fernberg	US Forest Service
NY22	NTN	Akwesansne	US EPA Clean Air
		Mohawk-Fort Covington	Markets Division

4. NADP Site Repairs

The contractor shall perform basic site repairs on an as-needed basis at the NADP sites supported by the US EPA's CAMD. The TOPO will provide technical direction as needed for these repairs. For the purposes of the cost estimate, the contractor shall include two one-person repair trips. If fewer than two trips are required, the EPA will not be invoiced for the repair trips.

V. DELIVERABLES AND SCHEDULE

All deliverables shall be reviewed and quality assured during the performance of this task order. Deliverables should be submitted to EPA electronically.

1. Technical Proposal & Cost Estimate

The contractor shall deliver a Task Order Technical Proposal and Cost Estimate in accordance with clause Attachment 12 Task Order Ordering Procedures of the contract (EP-W-16-015). The proposal shall be submitted 10 days after receipt of the SOW.

2. Monthly Progress Report

The contractor shall prepare and submit a monthly progress report by the 15th of each month summarizing the progress made, issues encountered or expected, work planned for the next reporting period and costs. These reports shall comply with contract clauses F.1 Monthly Progress Report and F-5 Reports of work.

Distribution of Deliverables:

Addressee	Copies
EPA Contracting Officer (Mike Fox)	1
EPA Task Order Project Officer (Taylor Macy)	1
EPA Alternate TOPO (Melissa Puchalski)	1

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	-	\$5,000.00	\$5,000.00
Total	-	\$5,000.00	\$5,000.00

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$34,804.00
Total	-	-	\$34,804.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 2	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P00001		See Block 16C		PR-OAR-20-01278		4002	
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
HQAD							
HQAD US Environmental Protection Agency William Jefferson Clinton Building 1200 Pennsylvania Avenue, N. W. Mail Code: 3803R Washington DC 20460							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. Attn: JOSEPH FARRELL 751 Arbor Way Ste 180 Blue Bell PA 194221972							
CODE 038086125				FACILITY CODE			
				9A. AMENDMENT OF SOLICITATION NO. 9B. DATED (SEE ITEM 11) 10A. MODIFICATION OF CONTRACT/ORDER NO. EP-W-16-015 68HERH20F0332 10B. DATED (SEE ITEM 13) 06/29/2020			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)				Net Increase:		\$5,000.00	
See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) EPA-B-32-103 - LIMITATION OF GOVERNMENT'S OBLIGATION						
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 038086125							
The purpose of this modification is to obligate incremental funding in the amount of \$5,000.00 to this task order.							
TOCOR: Macy Taylor							
LIST OF CHANGES:							
Reason for Modification: Funding Only Action							
Obligated Amount for this Modification: \$5,000.00							
New Total Obligated Amount for this Award: \$10,000.00							
Incremental Funded Amount changed: from \$5,000.00 to \$10,000.00							
CHANGES FOR LINE ITEM NUMBER: 1							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Michael C. Fox			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
(Signature of person authorized to sign)				 (Signature of Contracting Officer)		ELECTRONIC SIGNATURE 08/13/2020	

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-W-16-015/68HERH20F0332/P00001	2	2

NAME OF OFFEROR OR CONTRACTOR

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Obligated Amount for this Modification: \$5,000.00 Incremental Funded Amount changed from \$5,000.00 to \$10,000.00</p> <p>NEW ACCOUNTING CODE ADDED: Account code: 20-21-C-58D5-000A45-2505-2058DC0069-001 Beginning FiscalYear 20 Ending Fiscal Year 21 Fund (Appropriation) C Budget Organization 58D5 Program (PRC) 000A45 Budget (BOC) 2505 Job # (Site/Project) Cost Organization DCN-LineID 2058DC0069-001 Amount: \$5,000.00 Subject To Funding: N Payment Address: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 07/09/2020 to 07/08/2021</p>				

EP-W-16-015
Order#: 68HERH20F0332 (4002)
Modification#: P00001

ATTACHMENT B
SUMMARY OF TASK ORDER OBLIGATION/CEILING AMOUNTS

Total Funding/Obligation Amounts			
Period	Previous Amount	This Action	Amount
Base Period	\$5,000.00	\$5,000.00	\$10,000.00
Total	\$5,000.00	\$5,000.00	\$10,000.00

Total Task Order Ceiling			
Period	Previous Amount	This Action	Amount
Base Period	-	-	\$34,804.00
Total	-	-	\$34,804.00

Note: This task order is incrementally funded in accordance with contract clause B.5 Limitation of Government's Obligation (EPA-B-32-103).